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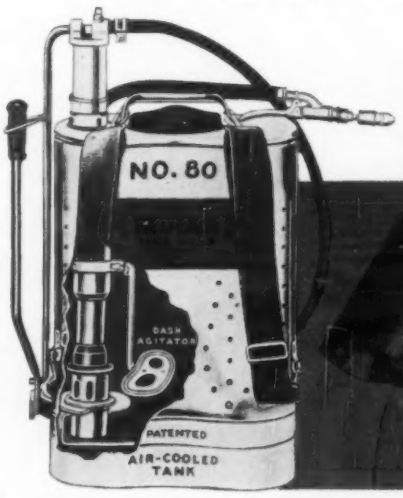

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The Role of Forest Recreation in Forest Land Management[1]

Edward P. Cliff

IN THE past two decades world dimensions have changed so quickly that many people do not realize they now live in a new and quite different world. This new world is ours. What we do and how we do it may shape the destiny of generations yet to be.

In forestry we deal with many factors. One is the static dimensions of land—another, the dynamic dimensions of population. We are all acutely aware of the heavy demands which will be made on land for producing high level, sustained yields of water, timber, forage, wildlife, and forest recreation to meet the ever expanding needs of increasing numbers of people. Our water needs alone, by 1980, will increase 120 percent. This is about the flow of 12 brand new Colorado Rivers.

Even more startling is the growth and prospective need for outdoor recreation. For example, in 1940 recreation use on the national forests amounted to 16 million visits; by 1960 it was 92 million visits. Our projections indicate that by the year 2000 the use will amount to about 600 million visits. This must be accommodated on lands which must produce twice as much timber to meet their share of the nation's wood supply just 40 years from now. These same lands also will be required to produce more water, more forage, more wildlife.

Similar increases in recreation have been experienced and are expected on the national and state park systems. Private lands, too, are feeling the pressure for outdoor recreation. This is bound to expand in the future—perhaps not in proportion to the demands on public lands but it will be substantial.

A sobering fact our profession must face is that the land base upon which forestry can be practiced is shrinking. Significant areas of forest land are being taken out of production each year. Last year the Department of Agriculture in a report to the Senate Select Committee on Water Resources pointed out the possibility that as much as 73 million acres of forest land might be diverted to the production of food for our growing population by the year 2000. Most of this would be in the South and would include some of the most productive forest land. The same report forecast that as much as 50 million acres of additional forest land might be used for urban and industrial developments, highways, airports, reservoirs, parks, and other facilities.

At a recent national conference on state parks, Dr. Marion Clawson of Resources for the Future estimated that some 20 million acres of additional land will be needed for state parks by the end of this century. It is a safe assumption that the bulk of this will be forest land.

Competition for use of wild land for various uses is already keen and it will become more intense. Many dedicated people are sincerely concerned about the rate at which the remaining virgin forests of the West are being developed by roads and changed by timber harvest. Some would like to slow the progress of development and conversion of virgin forests into managed forests and to preserve in a primitive condition as much undeveloped land as possible. Most of you are familiar with the various proposals to add substantial areas to wilderness, parks and other preservations which would restrict opportunities for full multiple-use management. This conflict of philosophies between the preservationists on one side and those who believe in conservation with use on the other, is one of the vital conservation issues of this century.

Foresters have taken the lead in wilderness preservation and today most foresters believe that wilderness should be preserved. Likewise we believe that it is proper for the really outstanding scenic, geological, archeological and historic areas in the country to be preserved and managed as parks. The real question is how much of the land needed by man to satisfy his hunger for the bare essentials of life—food,

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[1]Talk delivered at the Third Annual All-Day Meeting of the Washington Section, Society of American Foresters, February 16, 1961 at Washington, D. C.

water and shelter—is the nation justified in removing from commodity use?

A companion question is how far are foresters able and willing to go in providing for public recreation and protecting aesthetic values on the lands they manage? The rolling wave of outdoor recreation offers the forestry profession both a challenge and an opportunity. Are we prepared as a profession to rise to the challenge and see to it that forest lands contribute their full share to the recreation needs of the nation? Are we ready and willing to manage the whole forest for all of its multiple values —its undergrowth, its wildlife, its water, its scenery—as well as its timber? We had better be prepared, ready and willing to do so because if we are not, we can expect that someone else will take over the forest recreation job, which rightfully belongs to foresters, and deprive us of the opportunity to produce wood and other resources on substantial areas of forest land, both public and private.

Some of our critics claim that foresters are uninterested in or incapable of managing outdoor recreation. They speak with derision of sawlog foresters interested only in cutting timber. They picture the chain saws eating deeper and deeper into the virgin stands leaving stumps and cull logs and desolation. Many well-meaning people believe that any timber harvest is destructive. In the testimony on the Three Sisters Wilderness Area in Oregon it was contended that if any of the land were removed from wilderness classification the timber would be cut, the land would erode, the watershed would be ruined, and wildlife would suffer. In other words, forestry is poor land use. Sad to say that is not an uncommon belief. Also sad to say, foresters have made enough mistakes to keep this image alive.

Our profession has failed to dispel from the public mind the feeling that cropping timber is a destructive process. We have failed to sell fully the idea that timber management is more than timber cutting—that it is culture of the soil, seeding and planting of trees, thinnings and pruning, controlling fire and pests, and doing the other things to produce successive stands of vigorous trees. We need to do a better job of telling and showing the public that there is beauty in vigorous young growing forests, and in stands reaching healthy maturity as well as in old growth. We have to drive home the facts that managed forests offer a wide variety of recreation opportunities —camping, hunting, fishing, winter sports, boating, and aesthetics— that good forestry practices can create a variety of new recreation opportunities which are not available in undeveloped, unmanaged forests. Examples are roads for access by hunters, sightseers, campers and fishermen, and improved habitat for wildlife.

Above all, if we are to meet the challenge before us we must demonstrate by deed and act that forestry includes developing the recreation opportunities of forest lands and making them available to the public.

Lest I sound too gloomy I hasten to say that I do not apologize for the contribution the forestry profession has made to outdoor recreation. We have provided leaders in this field for years. Our accomplishments have been substantial on both private and public lands. We have a solid foundation to build on for the years ahead.

I am one who believes that foresters are better equipped than any other group or profession to manage forest lands for all their values, including recreation. I believe that multiple-use management presents the most promising solution to the problem of our shrinking forest land base, and the increasing needs for recreation and the essential material resources.

Good as we are we must be even better in the future. Meeting all of the demands that will be placed on forest lands will require more intensive management of all such lands for all of their values than most of us have ever seen or even visualized. To keep pace with the job, ours must be a growing, dynamic, imaginative profession.

We will not only need more—but vastly better-informed foresters. Today's and tomorrow's problems, challenges, perplexities and opportunities cannot be effectively met— except by men of ability who possess attitudes and characteristics tuned to the culture in which we live. We need men with vision, imagination, creativeness, boldness, and skill in harmonizing resource uses.

We must continue to grow in the knowledge of our profession. We must be sensitive to the social as well as economic values and nurture the ability to distill these factors into action programs acceptable to the "greatest number of people."

As foresters we must skillfully prevent our primary management objectives from becoming *too primary;* whether they be for timber production, recreation or wildlife, modifying them within reason will permit a greater variety of uses, thus creating opportunities to satisfy more people. In the final analysis, the will of the people eventually prevails. We must face facts —outdoor forest recreation is a cherished, established, and growing requirement of American society.

Attitudes of foresters and their education in preparation for social and land management decisions of the future give greater concern than technical phases of our profession. This is not peculiar to forestry. Recent studies reveal similar concern in other professional fields such as business administration and engineering. We must recognize that resource problems are not solvable in isolation from political and social complexities. Each is dependent to a greater degree on the other. We must learn to read the signs all around us—in the life history of every forest, in the warnings from water deficient areas, and in the mounting demands for all kinds of forest recreation. We must realistically appraise these demands in terms of the world around us.

Today we have within our reach the opportunity to draft a land use blueprint to more adequately meet the future needs of people. We can do it if we choose to do so. I believe we are going to do it.

Methods of Improving Biological Evaluation Procedures Used in Reaching Forest Insect Control Decisions[1]

R. W. Stark

INSECT CONTROL can be defined as a problem in population dynamics. The significance of each infestation must be evaluated by an analysis of factors affecting insect populations and damage relationships. In so far as improvement of present procedures is concerned, my observations could be summarized as follows: more research to develop more refined methods of sampling and damage assessment for more forest insects.

Specifically, one of the most fertile areas in which improvements can be made is in our attitude toward evaluation, both in the necessity for control and for the success of attempted control. Too often the criteria for control is based solely on the abundance of the insect pest which apparently will cause the death of a large volume of timber. The reason for this can often be justified on the grounds of expediency or practicality and indeed, in some problems, this may be enough. Our knowledge of the biology of certain insects and their damage is sufficient to know that given a certain set of circumstances, great losses will occur and control by any means is justified. Unfortunately, this is true only in isolated cases, and even in these, tends to a complacent "rear-guard" type of action. The short-term control of a problem is not an end in itself—indeed many examples of so-called "control" we see again and again in the literature are merely repeats of procedures initiated to stave off losses or to salvage timber already lost. They are not controls in the real sense; that the predisposing condition has been done away with or even understood and that there is not likely to be a recurrence, at least of that particular insect in a particular area. I wonder if it is always advisable to continue these "short-term controls?" Would it not be wiser to allow some, or portions of some, insect infestations to run their course and avail ourselves of the opportunity to study the consequences in their natural state? This would also enable us to assess the results of control, where attempted, more successfully. A further point is that perhaps with a little greater expenditure of effort or redirection of effort during "control operations," data can be gathered which will contribute to real control.

As stated, evaluation is a problem of population dynamics; sampling is one of the major tools in this study. Prior to the use of any known sampling methods or attempts to develop a sampling method the objectives of the study, survey or evaluation must be clearly defined. An intensive, detailed sampling program cannot be justified when the objectives of the work to be done can be satisfied by simpler methods based on some other population measurement. Objectives of this type fall broadly into the general categories:

1. The insect survey or extensive studies: the presence or absence of insects or relative abundance, perhaps according to broad subjective classes of infestation.

2. Intensive studies: complex population dynamics studies or biological assay of a region, trees, etc.

This distinction between extensive and intensive sampling is helpful because it determines sampling design to a large extent. However, the same basic data are required for both.

Objectives and implementation of methods to satisfy these objectives have not always been compatible; herein lies another area where improvement can be made. Either objective can also contribute material data to the other, often with no additional effort, merely a redirection of objectives or inclusion of secondary objectives.

In order to define our objectives more clearly and to achieve as much information as possible within these objectives it is necessary to examine the various expressions of population. It is felt that many of the surveys made to assess needs for control are not clear on the techniques available (or the latest jargon).

Population Intensity

This is the expression of insect numbers in terms of available food supply. Some people prefer to call it *relative saturation*. This type of population expression is particularly useful if the main objective is to determine the number of insects associated with various degrees of damage to the host plant. It suffers from the fact that changes of available food supply can affect population intensity even when there is no change in actual insect numbers. However, if this is understood, it can be accounted for. It seems to me that this is the most valuable type of expression for evaluating the need for control. Although it has been developed for several insects to a fairly refined level (predominantly defoliators) it has yet to receive widespread use or application to problems other than

THE AUTHOR is with the Department of Entomology and Parasitology, University of California, Berkeley.

[1]Paper presented as part of a symposium on biological evaluation procedures at the Annual Western Forest Insect Work Conference, Ogden, Utah, March 9-11, 1960.

those they were developed for.

A recent attempt to refine the description of insect numbers distinguished three general categories of insect populations which fit into the "Population intensity" type of expression.

1. *Tolerable:* Populations that do not utilize the entire excess biological productivity of the host.

2. *Critical:* Populations that utilize more than the excess biollogical productivity of the host but less than the total productivity. They imply a temporary situation since they must affect the host through the reduction of annual output. If such populations are maintained over a period of time, the host's productivity will decline.

3. *Intolerable:* Populations that are depleting the host at a rate greater than the current rate of production. Such populations reduce the host capital. They may persist for years but, ultimately, attrition destroys the host if the population remains constant or increases. A special case of intolerable population levels is experienced when a population reaches a level so high that the substrate is exhausted in less than the course of a single generation. In the case of deciduous trees and perhaps some conifers, this could be favorable from the host standpoint.

Also within the framework of population intensity fall those attempts to categorize populations on a subjective basis, e.g. as light, medium or heavy. These may be derived from population indices, about which I have a few words to say later, or more usefully from intensive population studies which yield population intensity data or absolute population estimates. These are only expressions of population intensity when they are derived from adequate data on insect attrition and absolute numbers.

The beauty of such subjective population classes is that they can be derived from a rapid, relatively precise sampling system which can be obtained through relatively simple mathematical formulas when a few parameters have been calculated or measured; parameters which are usually collected or known in the course of most population studies. These have not been recognized for their true value. In particular I am speaking of sequential sampling.

The chief significance of such an expression is that it provides readily used and rational bases for control decisions based on host loss. All the data used in arriving at such criteria are data which could be or are generally accumulated in various types of surveys and studies. This is particularly true if such a population expression is included as one of the objectives of sampling or population study.

If properly designed along the lines indicated above, control decisions are then modified only by supplementary considerations such as cost versus loss and probability of success of control.

Absolute population is the population measured in terms of a unit which cannot vary, such as a unit of forest area. The quantity of food available varies from year to year. Populations based on just food quantity may therefore reflect apparent changes which are not accompanied by absolute changes in insect numbers.

Basic population is derived from some basic unit for population sampling with supporting data on the structure of the tree and the forest which can permit conversion of the results to absolute or population intensity expression. Such units would include branch tips, terminals, area of bark, or area of foliage.

Relative population reflects only gross changes in populations such as is expressed in annual surveys as rare, common, or abundant and is not substantiated by adequate sampling data.

The above are known as direct expressions of population. Less direct but of some use and certainly of greater use than at present if properly derived is the *population index*. This consists of the use of some manifestation of insect damage or presence as an expression of population. Popular examples are degree of defoliation, frass-drop, dead or curled tips, and webs.

At the risk of being repetitious I would observe that it is not fully appreciated by workers in the survey field particularly that (1) a redirection or clarification of objectives in conducting surveys of any insect problem and possibly a slightly greater expenditure of effort, and (2) the effort to utilize new sampling techniques and approaches to sampling problems, be they survey or intensive or in any allied field, will undoubtedly yield dividends culminating in more precise evaluation procedures. Conversely, it is the responsibility of those workers in intensive population studies to include in their objectives (if the study is truly intensive the necessary data will be available) the possible application of their data in short-cut sampling methods, rapid evaluation techniques, and the like.

It often develops that sampling problems, either survey or intensive, extend into unfamiliar fields, particularly statistics. There is no dishonor associated with lack of the ability to use higher statistics properly—in fact many of the statistical tools necessary for handling complex biological data have yet to be designed. However, with the extensive network of laboratories, federal, state and provincial, private, and academic existing, and the rapid means of communication available, there is little difficulty in obtaining the advice of competent people in such problems. You have probably all noticed the recurrence of various statisticians' names in the literature, independently and as co-authors with entomologists. Here is my next area for improvement: cooperation with and utilization of available experts wherever they may be, in designing pioneer sample designs for maximum use, in analyzing results, or in extrapolating from known statistical techniques. One of the best known examples of course is the adaptation of sequential sampling from industrial quality control to economic grading of fish shipments, to insect sampling, and lately for sampling forest regeneration.

This line of thought leads of course to the basic problems of sampling which I will only itemize here with the general statement that for our self-improvement these must

be kept in mind at all times when developing a sampling or evaluation technique. Also, in many fields such as cone and seed insects and bark beetle sampling, more and better techniques have yet to be developed.

Sampling Problems

1. The timing of sampling.—This is conditioned by the biology, life history and behavior of the insect and availability of the various stages.

2. The mechanics of sampling.—The nature of the stand, tree size, insect biology and many other factors—biological and economic—are involved.

3. Selection of the sampling universe.—The sample must be representative of the medium in which the insect lives.

4. Selection of the sample unit.
   (a) All units must have an equal chance for selection.
   (b) The unit must have stability.
   (c) The proportion of the insect using the unit as a habitat must be constant.
   (d) Units must be sufficiently small so enough can be taken to provide estimate of variance. Small units also give flexibility to the system.
   (e) The unit should lend itself to quantitative assessment of total units per tree and per acre.
   (f) The unit must be facile enough to be delineated in the field and collected without severe loss or disturbance.

5. The tree is a major source of variability.—Sample units and trees must be chosen for representativeness.

6. Representatives must be continued within the stand, i.e. stories of trees or crown levels.

7. There should be a correlation between successive samples.—This supports the sample design and shows the statistical advantages of drawing samples from similar trees. Also permits more ease in analysis.

8. Optimum sample size.—Statistical techniques are available where this can be determined for a specific problem. This includes:
   (a) Degree of precision required.
   (b) Number of sample units per tree.
   (c) Number of trees per plot or sample.
   (d) Number of clusters per plot or sample.
   (e) Influence of population level.
   (f) The cost function.

Often at low population levels the statistical requirements exceed the cost function—be it expressed in time or money. This hinges on such considerations as attempts to keep the sampling error within reasonable limits or, conversely whether the sampling error achieved within practical limits makes the estimate worth having. Often it may be necessary to settle for a larger error or to use a less intensive sampling system.

9. Incidental data.—Usually acquired at no extra effort but frequently overlooked. This includes population intensity, life table data and other contributions to the knowledge of the whole ecosystem.

Statistics is not the only field of specialization where more extensive cooperation would be fruitful. Rather than do a mediocre job by ourselves, we should enlist the aid of physiologists, pathologists, and others, when the need exists.

Control Decisions

I have discussed very generally the field of assessment and need for research which is primarily concerned with the development and adaptation of better sampling techniques. A discussion of methods for improvement and evaluation of hazard for control decisions would not be complete without the inclusion of more basic studies. Control is a problem of population dynamics. This may be phrased another and equally legitimate way: problems of pest control are primarily ecological and only by means of properly integrated studies of the whole ecosystem, can we insure the safest and most intelligent use of direct control measures.[2] Such studies include: (1) A thorough knowledge of the insect biology. (2) The phenological relationships of insect, host, and associated organisms. (3) The behavior of the insect under various climatological, stand, topographical and other conditions, and (4) The structure of the total population complex, i.e. the insect itself, associated insects, parasites, and predators.

This knowledge and more will ultimately produce the best kinds of dividends as it is becoming recognized that an integrated program containing elements of all types of control — chemical, biological, and cultural—is feasible and of more lasting and fundamental value than the narrow approach—chemical control in particular. Where expediency demands immediate control every effort should be made to include studies which would add knowledge to our present fund and answer some of the burning questions asked of control measures—are there biological and cultural methods or factors in operation or capable of being used in conjunction with the proposed direct control? In far too many cases this is not being done even when it is acknowledged that a clear understanding of what they actually are doing is not present. I have been told of one case (agricultural) where chemical control is resorted to religiously at the beginning of a certain growth phase of the host tree and yet no one concerned had seen the stage of the insect they were supposed to be controlling!

The above remarks pertain directly to precontrol evaluation. The techniques developed should be designed so that they are equally applicable to post-control sampling. The assessments of the immediate biological results alone are not adequate. These must be continued for some years, if possible, to assess the full effects of the control program. The effect on generations succeeding that subjected to control procedures must be determined if we are to establish true control practices. Furthermore, although it is widely recognized that chemical control of one insect may lead to an upsurge of another, there is surprisingly little factual data on this phenomenon. This kind of knowledge is of the "incidental type" gathered in

[2]Webb, F. E. Aerial chemical control of forest insects with reference to the Canadian situation. Can. Fish Cult. 24 pp. March 16, 1959.

connection with the evaluation or assessment program.

Summary

To summarize in slightly more detail than at the beginning of this paper:

1. *Attitude.*—I believe that in many areas of forest entomology there has developed a complacent or rather negative attitude in insect control. This leads to a "willy-nilly" type of control where any new insecticide is seized upon and used. The ultimate achievement of real control of insect outbreaks can only be achieved if we maintain an optimistic attitude; seeking always to improve on present methods of control rather than to continue unproductive programs because they apparently satisfy short-term and political requirements.

2. *Statement of objectives.*—Clear objectives are necessary if any research program is to be productive. We should not be satisfied with a program, whether it is a survey or intensive research, unless the objectives go beyond the present boundary of knowledge. In particular, a control program should not be conducted with only an expedient objective in mind but should be designed to include objectives which will aid in future control studies. This would include new and better sampling methods and better knowledge of the effects of the control method on the whole ecosystem.

Related to the statement of objectives and conduct of control programs is a clear understanding of an insect population, its relationship with the host and methods of expression. These can all be improved upon, usually within the scope of present studies.

3. *Utilization of existing facilities.*—It is always a temptation to continue with "tried and true" methods but in the field of sampling, significant advances are continually being made. Adaptation of new, more refined, methods of sampling to specific problems is not being done to the possible limits. Nor is the available advice being utilized. Biometricians, statisticians and experts in other fields are within easy reach of most of us and their cooperation should be solicited in difficult problems—rather than maintaining autonomy at the price of inadequate or inferior methods. Often the basic principles of sampling are not adhered to, either through lack of understanding or the misconception that they would be impractical.

4. *Full exploitation of time and money expended.*—Most of the surveys, intensive sampling and control measures are not fully exploited for the data they can yield. With little or no additional expenditure of time and effort in such programs, data can be gathered to yield more refined, rapid and accurate sampling methods and/or population expression, leading to better criteria for control. This should be included in the objectives. Furthermore much of the data accumulated in such programs is not fully exploited. Existing data can often be used in designing new sampling methods or in improving present ones. These data may come from a source outside your own particular field (seed production, cone crop and other silvicultural studies may be used in preliminary sampling designs for cone and seed insects; mensurational data for bark beetle sampling studies, cultural control and many others.)

5. *Extension of existing ecological knowledge.*—Although sampling is fundamental to evaluation methods, we cannot ignore the ecological aspects. We are missing many fine opportunities of studying the insect ecosystem under stress when we aim only at immediate and total control. Although it is obviously impractical in many instances, there should be an attempt, when an insect outbreak occurs, to study a portion of that outbreak from the ecological viewpoint. This has been done in a few instances and has yielded tremendous dividends, e.g. the spruce budworm in eastern Canada and the gypsy moth in eastern United States.

6. *A widening of our concept of control.*—The word control conjures up different images in different minds. We could all benefit by broadening our thinking to include all the possible means of control. Agricultural entomology has demonstrated that integrated control—biological, chemical and possibly cultural, is feasible. In forest entomology we have a few examples of cultural control and the principle is generally recognized. What we need is a greater emphasis in our studies on the possibilities of combinations of controls.

7. *Postcontrol evaluation.*—The importance of precontrol studies as an aid in reaching control decisions has been elaborated on at some length. Postcontrol evaluation is of equal importance as it should tell you whether the decision reached was a sound one. The first question of course is whether the control was successful. The same criteria or methods used in evaluating the outbreak should be used in assessing the results of the control method. This further emphasizes the importance of an ecological study of a similar area in which control measures were not attempted. Without this there remains in many cases an element of doubt because the natural course of the outbreak or insect population can only be guessed.

Post-control evaluation does not end with a count of the insects killed. It has to be extended to associated insects—the ecosystem, and to successive generations. Often this is not done.

Effects of Burning and 2,4,5-T on Gallberry and Saw-Palmetto[1]

Glenn W. Burton
and Ralph H. Hughes

GALLBERRY (*Ilex glabra* [L.] Grey), the most widely distributed and the most abundant of the brushy plants that grow in the flatwoods of Georgia, has increased in recent years. Saw-palmetto (*Serenoa repens* [Bartr.] Small), which grows in association with gallberry, also appears to be increasing.

Both species are undesirable plants for several reasons. They compete with more valuable forage plants, thereby reducing the grazing value of extensive areas in the Coastal Plain. Both species act as severe obstacles to naval stores operations and greatly increase the danger of woods fires. They intercept the fall of pine needles, which accumulate on the plants to form a fuel that burns very readily. It is believed that they compete with pine seedlings and may furnish considerable competition until the pines have developed a full overstory.

Fire has been the most common method that landowners have used in attempting to control gallberry and saw-palmetto. With sufficient fuel in the form of dead grass to get the fire started, plants will readily burn to the ground. Fire merely kills the top growth, however, and reduces the height of plants for a period of a few years. Observations on gallberry indicate that fire reduces height growth for a period of only two or three years, and resprouting from root stocks may actually result in a greater number of stems. Saw-palmetto appears to react similarly. Hence, burning alone is an ineffective control method for these undesirable shrubs.

Control studies initiated in 1949 at the Alapaha Experimental Range at Alapaha, in the flatwoods of Georgia, revealed that gallberry could be controlled effectively with 2,4,5-T. Four pounds of acid-equivalent material per acre were required, however, to give a high percentage kill. Neither 2,4-D nor sodium trichloroacetate was effective.[2] The study reported herein was designed to reveal the effects of 2,4,5-T in combination with burning on the control of gallberry and saw-palmetto.

Materials and Methods

The test area was located on an imperfectly drained sandy soil of the Plummer series in typical flatwoods on the Alapaha Experimental Range. An area that included both gallberry and saw-palmetto was chosen so that the response of both plants to these treatments might be studied. Large trees and saplings were removed, care being used to disturb the shrubs as little as possible (Fig. 1). The area was fenced in order to eliminate livestock as a disturbing factor in conducting the study. The individual plots, 25 x 25 feet square, were delineated by plowing a furrow with a fire plow. This procedure established the boundaries very well and greatly facilitated the burning of individ-

FIG. 1.—Experimental area cleared of longleaf-slash pine overstory to facilitate research on the control of gallberry and saw-palmetto.

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[1]Cooperative investigations at the Alapaha Experimental Range, Alapaha, Ga., of the Crops Research Division, Agric. Research Service, and the Forest Service, U. S. Dept. Agric., and the University of Georgia, College of Agric. Expt. Sta., Coastal Plain Expt. Sta., Tifton, Ga. Published with the approval of the Director as Journal Series Paper No. 82.

[2]Halls, L. K., and G. W. Burton. Effect of 2,4-D, 2,4,5-T and sodium trichloroacetate on gallberry. Jour. Forestry 49:895-897. 1951.

ual plots on a randomized basis. Inside each 25-foot-square plot, 3.1-foot-square subplots were established where a good gallberry stand could be found. Angle-iron stakes were set one foot deep at the northwest and the southeast corners of these plots to establish a permanent subplot location.

In January 1956 an inventory was made of the gallberry and saw-palmetto within each plot. Average foliage cover estimates and height measurements were taken on gallberry and the crowns of saw-palmetto within each 25 x 25-foot plot were counted. The foliage cover data consisted of ocular estimates of the percentage of each plot shaded by gallberry foliage when the sun was directly overhead. The average height (inches) of living gallberry plants was determined by measuring the distance from the ground level to the base of the uppermost leaf. In addition, the total number of living stems of gallberry within each subplot was also tallied. A grass yield was taken in January 1956 from each 3.1-foot-square subplot by clipping the grass to a height of one inch and determining the dry weight of all forage removed.

The lack of information on the control of gallberry and saw-palmetto made it seem desirable to use a factorial experiment that would permit the study of the effect of a number of variables on the control of these plants. Four variables were chosen. All combinations of these variables, involving spraying of burned and unburned plots on three dates with three rates of 2,4,5-T in two carriers with the checks, gave a total of 38 different treatments. These treatments were completely randomized within each of two blocks. On March 7, 1956, half of the plots were burned. A low-volatile ester of 2,4,5-T was applied at rates of 2, 3, and 4 pounds of acid equivalent per acre on May 2, August 26, and November 20, 1956. Diesel fuel with a viscosity of 35 to 40 and water were used as the two carriers. A specially designed plot sprayer with speedometer, boom, and compressed air to give uniform rates and pressures was used. The chemical was sprayed at 40 pounds pressure in 50 gallons of carrier per acre and was applied from a height of approximately 2 feet to burned plots and a height of approximately 3½ feet to plots that had not been burned. Most of the spraying was carried out from 11 a.m. to 3 p.m. with temperatures ranging from 80 to 90 degrees F. and relative humidities varying from 75 to 100 percent. Lux liquid detergent, at a rate of 0.05 percent, was added to the water spray in order to get better coverage.

When the first spray was applied on May 2, unburned gallberry showed a maximum current new twig length of 3½ inches and an average length of 2½ inches. The leaves were approximately two-thirds mature size and flowering was just beginning. On the plots burned on March 7, the new basal sprouts were growing very rapidly and averaged some 5 inches in height. The leaves were approximately one-half mature size. The lowest-emerging leaf blades and petioles on the new saw-palmetto averaged 8 inches in height, and some of them reached a height of 12 inches. Approximately 10 to 15 percent of the saw-palmetto crowns were developing flowers at this time. New growth on the unburned saw-palmetto was much slower than on the burned plants and flower stalks were very rare.

On August 26, when the second spray was applied, the current gallberry twigs averaged 7 inches in length on the unburned plots. The maximum length was about 11 inches and the leaves were full size. On the burned plots, new gallberry sprouts averaged about 17 inches in height, and the average maximum height of the sprouts was 23 inches. The leaves on the burned plots were slightly larger than those on the plots not burned.

On November 20, when the third spray was applied, the growth of both burned and unburned gallberry was progressing at a very slow rate.

Variations in defoliation of gallberry resulting from these treatments were rated from 1 to 5, 1 representing the least injury and 5 the greatest. Injury to saw-palmetto was expressed in variations in leaf scorch, which was similarly rated from 1 to 5, 1 representing the least injury and 5 the most. Other effects of these treatments on gallberry were determined by counting the living stems within each permanent quadrat, measuring the height of the average stem in the 25-foot-square plots and estimating the percent foliage cover in plots of this size. These data were collected on October 3, 1957, and September 15, 1958. Living saw-palmetto crowns within each 25 x 25-foot plot were tallied on October 3, 1957, and September 15, 1958. Forage yield was obtained on September 15 and 16, 1958, by clipping the grass in each permanent 3.1-foot-square quadrat to a height of one inch and determining the dry weight of all forage removed.

Although an effort was made to locate the experiment in a uniform stand of gallberry and saw-palmetto, considerable variation existed between plots. In order to adjust for this variation, measurements made in 1957 and 1958 were expressed in percent of measurements made in January 1956, to give percentage data showing the amount of change resulting from treatment. These percentages were subjected to statistical analyses and furnish the basis for Tables 1, 2, and 3. Since the gallberry-height data seemed to have little significance, they have not been summarized in this paper.

Results

All four variables in this study (burning, application date, rate, and carrier of 2,4,5-T) significantly influenced the leaf injury of both gallberry and saw-palmetto. Many of the interactions between these variables also gave significant mean squares. Since the injury to the leaves of gallberry and saw-palmetto resulting from spraying was not well correlated with the control of these plants, the leaf-injury ratings have not been prepared in tabular form. The results of these observations may be summarized as follows.

Increasing the rate of 2,4,5-T from 2 to 4 pounds per acre increased the leaf injury to both gallberry and saw-palmetto. Leaf

injury was observed to be greater on both species when oil was used as the carrier. Leaf injury to gallberry was greatest after the May spraying, considerably less after the August spraying, and least after the November spraying. Saw-palmetto, on the other hand, suffered the greatest injury when sprayed on August 26.

The analyses of variance of the survival data taken on October 3, 1957, and September 15, 1958, on both gallberry and saw-palmetto have been brought together in Table 1 to show the significance of the main variables and their interactions. A study of this table permits the following generalizations.

Rate of 2,4,5-T ranging from 2 to 4 pounds of actual acid equivalent per acre had no significant effect upon the survival of either gallberry or saw-palmetto. This would suggest that 2 pounds would have been adequate under the conditions of this experiment. The mean-square data show that date of application of the spray material was the most consistently significant and had more effect than other variables included in the study. Although burning was not a significant variable, on the average, the significant interactions involving burning indicate that burning was an important variable in this test. In this study, the carrier for 2,4,5-T also appeared to be a significant factor, particularly as it affected the percentage survival counts of the gallberry plant. The importance of choosing the proper carrier to fit the spraying date is demonstrated by the significant interactions involving date and carrier for all four measurements taken on gallberry survival.

Since the three rates of 2,4,5-T had no effect upon the survival of either the gallberry or the saw-palmetto, rate data may be averaged to give a total of six measurements for any combination of the other three variables. This has been done for gallberry in preparing Table 2. The magnitudes of the LSD's reveal that even after combining the data in this way, the precision was not nearly as good as was desired.

The data in Table 2 indicate that the lowest percentage survival observed on October 3, 1957, was obtained when 2,4,5-T was applied in water to burned plots on August 26. It is interesting that water was 10 times as effective as a carrier in August as in November. The best kill with oil as a carrier was obtained when 2,4,5-T was sprayed on the gallberry on November 20. The data showed little difference in the effectiveness of water and oil as carriers when applied on May 2. Although the differences between oil and water as carriers

TABLE 1.—ANALYSES OF VARIANCE OF PERCENTAGE SURVIVAL COUNTS ON GALLBERRY AND SAW-PALMETTO AND FOLIAGE COVER OF GALLBERRY AS INFLUENCED BY PRE-BURNING TREATMENT, APPLICATION RATE, DATE, AND CARRIER OF 2,4,5-T

Source	DF	Mean squares for gallberry percentage survival counts		Mean squares for foliage cover of gallberry		Mean squares for percentage saw-palmetto survival
		10/3/57	9/15/58	10/3/57	9/15/58	9/15/58
Replication	1	—	—	—	—	—
Burn vs. none (B)	1	71	186	6,404*	8,822*	1,096
Date (D)	2	8,577**	4,073**	26,535**	14,741**	2,077**
Rate (R)	2	456	596	109	945	121
Water vs. oil (W)	1	11,674**	3,587**	13,203**	767	715
B × D	2	5,116**	1,775*	46	1,004	385
B × R	2	91	96	1,547	1,919	525
B × W	1	2,936*	923	847	190	1,113
D × R	4	1,040	313	1,443	852	469
D × W	2	23,813**	11,273**	17,857**	4,888*	505
R × W	2	738	610	3,728	5,250*	33
B × D × R	4	529	134	1,852	1,022	295
B × D × W	2	2,577*	1,044	95	413	75
B × R × W	2	230	259	808	5,946*	190
D × R × W	4	1,103	397	1,693	1,715	327
B × D × R × W	4	653	308	1,962	1,957	441
Error	35	589	459	1,178	1,499	338

* P = .05. ** P = .01.

TABLE 2.—PERCENT SURVIVAL AND FOLIAGE COVER OF GALLBERRY THE FIRST AND SECOND YEARS AFTER SPRAYING WITH 2,4,5-T

Pretreatment	Carrier	Sprayed[1]	Survival of stems 1st year[2]	Survival of stems 2nd year[3]	Foliage cover 1st year[4]	Foliage cover 2nd year[5]
			Percent			
Burned[6]	Water	May	55	51	87	89
		August	15	16	15	26
		November	154	109	114	90
	Oil	May	57	53	77	92
		August	32	35	26	36
		November	19	24	19	47
Not burned	Water	May	66	59	99	106
		August	32	33	31	45
		November	82	72	129	110
	Oil	May	68	57	104	90
		August	53	55	48	79
		November	21	31	47	83
L.S.D. (P = 0.5)			28	25	40	45

[1]May 2, 1956; August 26, 1956; and November 20, 1956.

[2]$\frac{\text{Number of live stems 10/3/57}}{\text{Number of live stems 1/24/56}} \times 100$. Percentage survival for unsprayed check plots October 23, 1957, was 174 and 82 for burned and unburned plots, respectively.

[3]$\frac{\text{Number of live stems 9/15/58}}{\text{Number of live stems 1/24/56}} \times 100$. Percentage survival for unsprayed check plots October 23, 1957, was 194 and 82 for burned and unburned plots, respectively.

[4]$\frac{\text{Foliage cover of gallberry 10/3/57}}{\text{Foliage cover of gallberry 1/24/56}} \times 100$.

[5]$\frac{\text{Foliage cover of gallberry 9/15/58}}{\text{Foliage cover of gallberry 1/24/56}} \times 100$.

[6]March 7, 1956.

for 2,4,5-T applied on August 26 were not significant at the 5 percent level, they were consistently in favor of water, and since water is the cheaper material, it would, of course, be the preferred carrier. The 154 percent survival for burned plots sprayed with water on November 20 indicates that there were more stems per plot on October 3, 1957, than when the initial inventory was made in January 1956. This would suggest that spraying actually increased the number of stems except for the observation on the check plots that indicated that the number of stems on gallberry plots burned and not sprayed had increased in the same period so that survival was 174 percent. The 82 percent survival observed on the unburned check plot shows that some of the stems counted in 1956 had died by October 3, 1957. Halls' observations that burning may actually increase the number of stems developing from the rootstocks of gallberry are confirmed by these findings.

Most of the changes occurring during the last year of the study were small and of little significance. Generally, there was a reduction in number of stems per unit area on the plots sprayed in May, a slight increase in the number of stems on plots sprayed on August 26, and an increase in the number of stems sprayed with oil in November. The striking 1958 reduction in the number of stems on the burned plots sprayed with water in November, as compared with the 1957 data, is interesting and suggests that at least two years will be required to appraise the value of such treatments.

Since the foliage-cover data in Table 2 were ocular estimates, they would be expected to be less precise than actual counts of gallberry stems used in preparing the survival data. It is not surprising, therefore, that the data tend to be less consistent in the two years and that the LSD's are somewhat larger than those obtained for survival of stems. The data for foliage cover do correlate quite well with data on stem numbers and would lead to the same general conclusions. It is interesting that although the May applications of 2,4,5-T, for example, reduced the number of stems 50 percent, they had no effect on the foliage estimates. It is evident, therefore, that a reduction of as much as 50 percent in stem number will probably have very little effect on foliage cover, since the remaining stems will make enough additional growth to fill the spaces left by the ones that died out. When about 85 percent of the stems are killed, however, as in the best August treatment, it appears that foliage cover will also be reduced 75 to 85 percent.

Date of spraying was the only variable significantly influencing the survival of saw-palmetto crowns by September 15, 1958, two years after treatment (Table 1). However, Table 3 shows that date of spraying was significant only on saw-palmetto that was burned and indicates that August 26 was the only date that gave a significant reduction in saw-palmetto stand.

The best forage yields (2,006 pounds of dry matter per acre) were obtained from plots burned in March and sprayed with 2,4,5-T in water in August. The burned unsprayed check plots produced only 620 pounds of dry matter per acre. An analysis of the yields obtained from these treatments shows that the plots sprayed with 2,4,5-T significantly outyielded the checks. Thus, it appears that the spray treatment, which reduced the gallberry stand some 85 percent, permitted the forage grasses to increase their growth more than threefold.

TABLE 3.—PERCENT SURVIVAL OF SAW-PALMETTO CROWNS THE SECOND YEAR AFTER SPRAYING WITH 2,4,5-T

Pretreatment	Date sprayed (1956)	Survival[1] of crowns (9/15/58)
		Percent
Burned (3/7/56)	May 2	50
	August 26	24
	November 20	39
Not burned	May 2	50
	August 26	40
	November 20	47
L.S.D. (P = 0.5)		15

[1]$\frac{\text{Number of live crowns 9/15/58}}{\text{Number of live crowns 1/24/56}} \times 100$. Percentage survival for unsprayed check plots on September 15, 1958, was 45 and 53 for burned and unburned plots, respectively.

Summary

A 2 x 3 x 3 x 2 factorial experiment with two checks, designed to discover a more effective method for controlling gallberry and saw-palmetto, was begun in the spring of 1956. In this test, plots burned March 7, 1956, and not burned were sprayed on May 2, August 26, and November 20, 1956, with 2, 3, and 4 pounds of acid-equivalent 2,4,5-T per acre in two carriers—water and oil. The experiment was replicated twice.

Leaf injury to both species increased with increasing rates of 2,4,5-T and was greater when oil was used as a carrier. It was not well correlated with control of these species, however.

Rate of 2,4,5-T had no effect upon control of either species, indicating that two pounds per acre was adequate in this test.

The best control of both gallberry and saw-palmetto was obtained by burning March 7 and spraying August 26 with 2,4,5-T in water. This treatment killed 84 percent of the gallberry stems by count and reduced the foliage cover some 75 to 85 percent. It also reduced competition enough to permit a threefold increase in the yield of forage grasses by September 1958.

When 2,4,5-T was applied in November, oil was a much more effective carrier for the herbicide than water. When the herbicide was applied in May, oil and water were equally effective as carriers.

Effects of Thinning Seed Spots on Growth of Three Conifers in the Inland Empire

Marvin W. Foiles

DIRECT seeding is a widely tested method of reforestation. One method of direct seeding is to sow the seeds in small prepared spots spaced at desired intervals. More than one seed is planted in each spot to insure adequate survival for uniform stocking, the number planted depending on the germinative capacity of the seeds and expected mortality. Consequently several seedlings often become established on a single spot.

Some foresters fear that competition among several seedlings in a small spot will necessitate thinning to prevent stagnation, loss of growth, or the development of poorly formed trees (*3, 5, 7, 8*). Although many workers have questioned the desirability of multiple stocking in seed spots, few have measured results from experimental tests. Garman and Orr-Ewing (*1*) reported that 10- and 15-year-old Douglas-fir dominants increased in both height and diameter as stand density increased. Roe (*6*) reported an increase in height but a decrease in diameter of dominant jack pine as density increased. Lynch (*4*), reviewing the literature on the effect of stand density on height growth of natural stands, concluded his review with these two general observations:

> First, the effect of density of stocking on height growth varies with the species concerned and is related to their basic growth habits and abilities to express dominance. Second, when height growth is retarded by density of stocking, it is most apparent on poor sites where root competition is high.

Results, described below, from tests of artificial thinning of seed spots show how density affected height and diameter growth of seedlings of three coniferous species in northern Idaho and northeastern Washington.

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The Experiments

The two locations chosen for this study were the Kalispell Creek drainage of the Kaniksu National Forest in northeastern Washington, and Solitaire Creek and Deception Creek on the Coeur d'Alene National Forest in northern Idaho. These areas are representative sites within the western white pine type. The Kaniksu plots were located on a flat bench having a fine sandy loam soil. The Coeur d'Alene plots were located on north-facing slopes with silt loam soils containing considerable amounts of rock fragments. Both the Kaniksu and Coeur d'Alene sites had been prepared by harvesting the merchantable timber, felling the remaining trees, and broadcast burning the debris.

Seed spot thinning was tested on four plots, all of which were seeded in the fall of 1937 following clearcutting and prescribed burning. Two plots on the Kaniksu site were sown with western white pine and ponderosa pine seeds one year after burning. The two Coeur d'Alene plots were sown with western white pine and Engelmann spruce seeds one month after burning. Twenty-five seeds were planted in each spot; the spots were spaced 6 feet apart.

Alternate seed spots were thinned three times to reduce stocking progressively to one established seedling per spot. They were thinned to a maximum of 15 seedlings per spot after germination in the spring of 1938; to four seedlings at the end of the second growing season; and to only one seedling per spot at the end of the third growing season. The alternate unthinned spots contained up to 23 established seedlings each, making available a wide range of densities for comparison. Results reported here are based on measurements of 193 ponderosa pine seed spots, 186 white pine spots in the Kaniksu plot, 210 white pine spots in the Coeur d'Alene plot, and 421 Engelmann spruce spots.

Only the dominant, or tallest, seedling in each spot was measured. Diameter at 1 inch above the ground line and total height were measured at the end of the ninth and seventeenth growing seasons. Helmers (*2*) reported the effects of thinning through the ninth growing season. The present paper reports the results after 17 years of growth.

Results

Diameters of dominant seedlings of each species tested progressively decreased as numbers of seedlings per spot increased from 1 to 23 (Fig. 1). The effect was most evident for ponderosa pine and least evident for Engelmann spruce; white pine was intermediate between these two species. Analyses of variance showed the regressions of diameter on number of trees per spot to be highly significant for each species.

Heights of the dominant seedlings of each species tended to be shorter on dense seed spots (Fig. 2), but the degree to which height was affected varied among species and plots. Analyses of variance showed the regressions of height on number of trees per spot to be highly significant for ponderosa pine, significant at the 5 percent level for white pine on the Coeur d'Alene plot, but nonsignificant for white pine on the Kaniksu plot and for spruce.

Discussion

Some results shown by measurements after 17 years differ from trends indicated by measurements

after 9 years (*2*). The effect of density on diameter growth of all three species was the same as had been reported earlier, but was more pronounced. The same thing is true of ponderosa pine height growth. However, the effect on height growth of western white pine and Engelmann spruce after 17 years was reversed from the earlier results. After 9 years, heights of dominant white pine and spruce increased slightly as numbers of seedlings per spot increased. Eight years later the trend had reversed, and heights decreased as seed-spot density increased. The effect on heights of spruce was slight in both the 9- and 17-year measurements, but the depressing effect on heights of white pine after 17 years was significant in one test and indicated a real change. These results also differ from those of Garman and Orr-Ewing (*1*), who reported increases in both height and diameter growth of Douglas-fir as density increased to six seedlings per spot. Roe (*6*) reported an increase in height but a decrease in diameter for 10-year-old jack pine as density increased. Apparently the response to increasing seed spot density varies among species and sites.

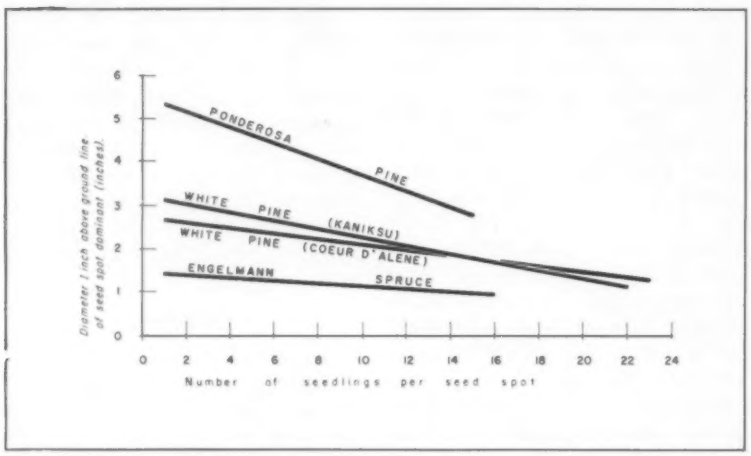
PONDEROSA PINE
WHITE PINE (KANIKSU)
WHITE PINE (COEUR D'ALENE)
ENGELMANN SPRUCE
Diameter 1 inch above ground line of seed spot dominant (inches).
Number of seedlings per seed spot

FIG. 1.—Effect of seed-spot density on diameter of dominant seedling 17 years after sowing.

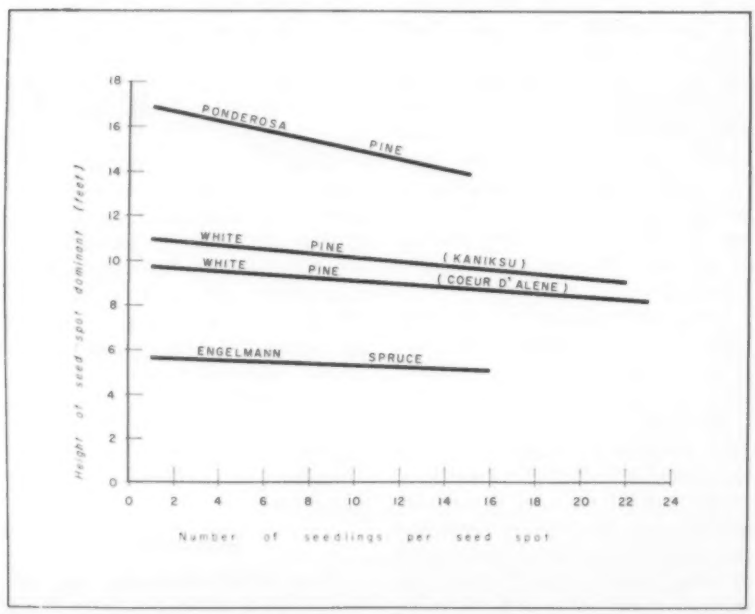

FIG. 2.—Effect of seed-spot density on height of dominant seedling 17 years after sowing.

Differences in juvenile growth rate of the three species might account for the differences in the rate and age at which seedspot density affected height growth in this study. Ponderosa pine, which has the fastest initial growth rate, showed the depressing effect of density on height earlier and more severely than the other species. White pine, intermediate in initial growth rate, was affected during the second decade, when white pine height growth normally increases. The effect of increased density on height growth of the slower growing spruce was still slight after 17 years.

The reasonable growth and positive expression of dominance indicate that a satisfactory stand will develop without thinning. Therefore thinning of seed spots is not required with direct seeding. Thinning dense seed spots to increase diameter growth may be desirable, just as thinning dense natural stands is desirable, if the benefits offset the cost of thinning. However, the benefits from thinning should diminish as the seed spot dominants improve their position by shading out competitors. Some of the benefits of thinning can be gained by planting fewer seeds per spot or by broadcast seeding. However, more research is needed to determine the minimum number of seeds per spot or seeds per acre that will result in satisfactory stocking with all the variable conditions affecting seedling germination and survival. The development of more effective rodent repellents will reduce seed losses somewhat, but seedling survival will still vary with such conditions as seed viability, seedbed condition, competing vegetation, and weather.

Summary

Direct sowing of ponderosa pine, western white pine, and Engelmann spruce seeds in small prepared spots resulted in establishment of several seedlings in each spot. Some spots were artificially thinned to test the effects of seed-spot density on the growth of each

of these species in northern Idaho and northeastern Washington.

Results of this experiment show that the number of seedlings per spot significantly affected diameter growth of 17-year-old trees of all three species. Diameter growth of the dominant seedlings decreased as the number of seedlings per spot increased. Height growth of ponderosa pine also decreased significantly with increasing seed-spot density. A decrease in height growth of western white pine on densely stocked spots was significant in one test but not in the other. Height growth of Engelmann spruce tended to decrease with increasing density, but not significantly.

Thinning seed spots is not recommended, for a satisfactory stand will develop without it. Thinning to increase diameter growth is advisable only under the same management and economic conditions that would make it advisable to thin dense natural stands.

The benefits of thinning might be obtained by planting fewer seeds per spot or by broadcast seeding, but more research is needed to determine the optimum number of seeds to sow with such variable conditions as seed viability, seedbed condition, competing vegetation, and weather.

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Gifford Pinchot State Park Opened in Pennsylvania

The Gifford Pinchot State Park, located between York and Harrisburg, Pennsylvania, was officially opened on May 26 by Governor David L. Lawrence and Secretary of Forests and Waters Maurice K. Goddard.

With an area of 2,250 acres, the park has a 340-acre lake that is being developed for picnicking, boating, swimming, and fishing.

In attendance at the program were cabinet officers and officials of the state government, members of the general assembly, the federal government, and conservation organizations. The Society of American Foresters was represented by Executive Secretary Henry Clepper.

Development of the 2-Index System of Rating Forest Fire Danger

A. W. Lindenmuth, Jr.

THE 2-index system of rating forest fire danger was devised for the ponderosa pine forests of the Southwest during 1953 and 1954 to develop an improved fire danger rating system to help eliminate serious fires in the region. The system has been used intensively by the Forest Service in the Southwest since 1955, and in the Black Hills of South Dakota since 1958. It has proved reliable. This is a report of the principles and general procedures followed in developing the 2-index system.

The Forest Fire Problem

The ponderosa pine type in the Southwest is characterized by relatively large quantities of relatively flammable fuel, frequent lightning, and much human use. Climatically in this type, summer is wet, spring and fall are dry, and winter frequently is wet but occasionally is dry.

Most of the 1,900 fires that start on the southwestern national forests annually occur in the ponderosa pine type. About 83 percent are ignited by lightning, mostly in July and August during the wet season. Sometimes many occur at the same time. Lightning storms usually produce some precipitation that raises fuel moisture content. Hence, few of the summer lightning fires become serious. The exceptions are "sleepers" that smoulder for days or sometimes for weeks until fuels dry to the point that fires can become serious.

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The work reported herein was done while the author was employed by and working in connection with the Southwest Region, U. S. Forest Service, at Albuquerque, N. Mex.

Man-caused fires occur chiefly during spring and fall, the driest parts of the fire season. Those starting during bad burning conditions account for most of the serious fires. The heart of the problem is the occasional fire that persists until bad burning conditions arrive or starts during bad burning conditions. Man-caused fires create most of the trouble. The probability of ignition or number of fires are not primary problems. The critical task is to consistently and accurately identify bad burning conditions, the periods when fires can become serious.

Forest Fire Danger Rating Requirements

From an appraisal of the fire problems, it was clear that a fire danger rating system for use in the Southwest primarily should: (1) apply specifically in the ponderosa pine type, (2) rate cumulative drying throughout the year as the basis for an index of fire potential, and (3) rate current weather as the basis for an index of opportunity for fires to develop their full potential.

Conventional multifunctional indexes "from which ease of ignition of fires and their probable behavior may be estimated" (7) do not meet these requirements. An index correlated with both ease of ignition of fires and their probable behavior is not a specific index of ignition nor behavior, because the two phenomena are not affected in the same way by fire danger variables. The sacrifice made to include ignition in fire danger ratings weakens the fire behavior component that is so important in the Southwest.

Devices that measure or estimate fuel moisture in moister climates fail in the Southwest. Such devices as fuel moisture indicator sticks, and relative humidity and cumulative drying indexes based on either or both, yield fire danger ratings that are high practically all the time in the Southwest, except during and for a short time after precipitation.

A system was therefore devised that uses two independent indexes, drought index and rate-of-spread index. A method for estimating fuel moisture was developed specifically for the ponderosa pine type in the Southwest.

Estimates of Fuel Moisture

Estimates of fuel moisture are the backbone of both indexes in the 2-index system. Moisture content in woody fuels operates like a bank account: there are periodic deposits and withdrawals of water. The objective was to set up a bookkeeping system to keep account of both deposits and withdrawals and from that record strike a balance day by day of the moisture in fuels. It was done with moisture depletion-accretion curves.

Figure 1 shows a typical drying curve starting with saturated fuel and assuming a relatively constant vapor pressure in the atmosphere. Rates of depletion are fast when fuel is wet. At this stage free water predominates. Its vapor pressure is relatively high. During drying periods, the difference between vapor pressure of water in the fuel and in the air is relatively large. As the fiber saturation level is approached, further drying involves chiefly bound water, which has a lower vapor pressure, and this vapor pressure decreases below the fiber saturation level as the quantity of residual moisture decreases. The difference in vapor pressure between water in fuel and in air decreases. A larger amount of energy is required to remove bound

water than the same quantity of free water and the rate of drying therefore slows up. The level of residual moisture at a given time thus has a strong quantitative influence on depletion and accretion.

The factors used to estimate fuel moisture during drying periods are: (1) estimated fuel moisture content at the beginning of the period, (2) elapsed time, and (3) the estimated difference in vapor pressure between water in fuel and water in the atmosphere. During wetting periods, fuel moisture is estimated from (1) estimated fuel moisture content at the beginning of the period, and (2) quantity of precipitation.

Fuel moisture content at the beginning of a period is the amount computed for the preceding day. Elapsed time is expressed in calendar days. The vapor pressure of water in the fuel, called fuel vapor pressure hereafter, is related to air temperatures measured each day. The vapor pressure of water in the atmosphere, called ambient vapor pressure hereafter, is treated as a constant, within seasons, for the following reasons.

Ambient vapor pressure in the semiarid Southwest characteristically is low and similar from day to day during precipitation-free periods. The quantity of water in the air tends to remain constant during these periods throughout the Inland West (*3*). Relative humidity changes are largely the result of temperature changes (*4*) and therefore have only small effects on ambient vapor pressure. According to checks that were made, day to day changes in ambient vapor pressure during precipitation-free periods average approximately 3 percent of the difference between fuel vapor pressure and ambient vapor pressure. Variations in ambient vapor pressure thus are insignificant in comparison with the relatively large difference between fuel vapor pressure and ambient vapor pressure during precipitation-free periods.

Amount of drying during each 24-hour period then is related to the area under the fuel vapor pressure curve for the period (Fig. 2). Amount of drying over several days is related to the sum of the daily areas. By this technique it is possible to greatly improve the time scale in moisture depletion-accretion relations by weighting each day in proportion to the area under the fuel vapor pressure curve and summing the weights day by day. In the process, fuel vapor pressures as such are not cumulated; areas under the fuel vapor pressure curve or quantitative drying are cumulated. The results are referred to as cumulated vapor pressure.

FIG. 1.—A typical moisture depletion curve for woody material illustrates the relationship between fuel moisture content and time, assuming relatively stable atmospheric conditions, and shows the effects of free and bound water on the slope of the curve. Adapted from Metz (*5*).

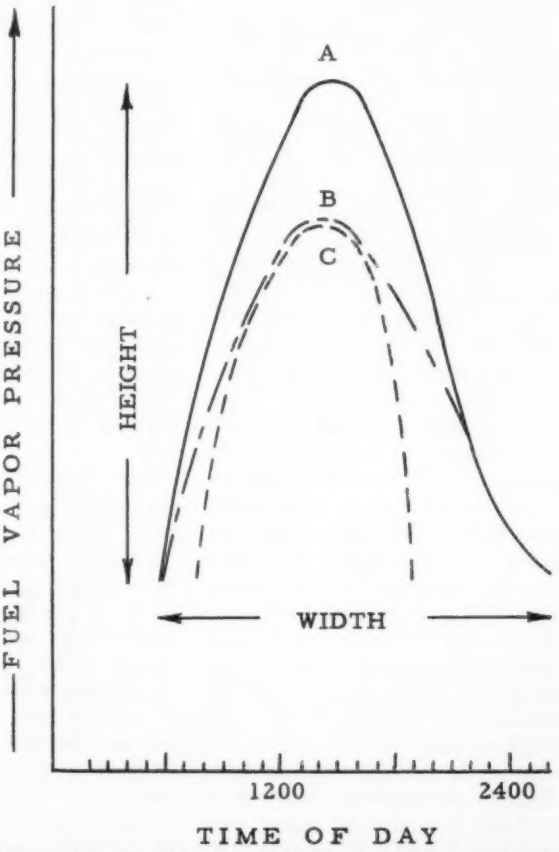

FIG. 2.—Representative daily fuel vapor pressure curves: (A) 80-degree day in late spring, (B) 70-degree day in late spring, and (C) 70-degree day in late autumn, showing differences in area under the curves. The tails of the curves are not shown because moisture changes at low temperatures generally are unimportant.

Drought Index

Drought index was based on moisture depletion and accretion in the upper foot of bare soil. Data from the Vicksburg Infiltration Project, a cooperative study by the U. S. Forest Service for the Waterways Experiment Station, Corps of Engineers, U. S. Army, Vicksburg, Mississippi, were used.

Soil moisture is a good index of drought because (a) the moisture depletion-accretion curves for large fuels and bare soil are similar, and (b) large fuels and a foot of bare soil are both large, slow-drying reservoirs of moisture which reflect the effects of cumulative drought over a long period of time. Baver (*1*) points up the characteristics of the curves for soil and the reasons for changes in slope. Several reports, one by Stamm and Loughborough (*6*) for instance, show that woody material dries and wets in a similar manner.

The first step in developing the depletion-accretion curves for drought index was to establish a relation between soil moisture and cumulated vapor pressure. Daily soil moistures plot over cumulated vapor pressures in a straight line relationship on log-log coordinate paper within the range of 5 to 30 units[1] of cumulated fuel vapor pressure. That range accounted for a majority of all observations. The slope of the line was found to change with season, however.

The reason why the slope of the linear relation changed with season is illustrated by Figure 2. The amount of daily moisture depletion is determined by the area under the daily fuel vapor pressure curve. The area under the curve depends in turn on the daily maximum fuel temperatures (height of curve) and the duration of high temperatures (width of curve). As daily fuel temperatures were represented in the cumulated vapor pressures they were accounted for. Changes in slope of the lines were therefore due mainly to differences in daily duration of warm temperatures (width of curve) and these change with season. The ratios of fuel moisture depletion for similar fuel vapor pressures at different seasons were therefore determined and expressed as coefficients which could be used to adjust the drying influence of cumulated vapor pressure for season. The coefficients became:

Period	Coefficients applied to cumulated vaper pressure
June 16—July 15	1.0
May, June 1-15, July 16-31, August	0.9
April 16-30, September, October 1-15	0.8
March, April 1-15, October 16-31	0.67
January, February, November, December	0.5

This means that in November only half as much evaporation is expected on a 70-degree day, for example, as on a 70-degree day between mid-June and mid-July. Only 67 percent as much is expected on a 70-degree day in March.

Although most of the adjustment apparently was necessary to compensate for variations in length of the warm period of the day for different seasons of the year, some may have been required to compensate for variations in the size of the ambient vapor pressure constant and other factors.

Adjustment of cumulated vapor pressure for season of the year, by use of the coefficients, enabled one curve of moisture depletion-accretion in relation to cumulated vapor pressure to be used throughout the year.

The three depletion-accretion curves in Figure 3 based on a relation between moisture content and cumulated vapor pressure were then drawn, one for each of three levels of preceding winter precipitation. The complete role of preceding winter precipitation as a fire danger variable is not known. It may be more important in arid regions than in humid regions. Fire danger ratings are apparently improved by including preceding winter precipitation as a variable in the Southwest.

Only one curve is used in any one calendar year. The curve to use depends upon the preceding winter precipitation. Curve A applies if winter precipitation was enough to saturate the top foot of soils upon which the curves were based, 3.51 inches or more. Curve B applies if winter precipitation was 2.51 to 3.50 inches, and curve C if precipitation was 2.50 inches or less. Winter precipitation of less than 2.50 inches usually precedes a bad fire year in the Southwest.

Precipitation is considered to be winter precipitation starting when the first snowfall in November or December lingers or from the time of the first general precipitating storm after December 1 regularly followed by average daily temperatures below 50 degrees. Winter precipitation ends when the snow that accumulated during winter melts, or in the event of an open winter, when average daily temperatures regularly reach 50 degrees or more. Winter for this purpose is the period when snow regularly covers the ground, or in the absence of snow, when average daily temperatures regularly are below 50 degrees.

Drought index calculations begin when the period of winter precipitation ends. If the first day of the season is April 1 and mid-day temperature, measured at 1:00 p.m., is 69 degrees, cumulated vapor pressure is 0.47 inch (vapor pressure of water at 69 degrees, 0.707 inch, times 0.67 the coefficient for April 1-15). On the second day of the season, if drying continues, an amount calculated in the same manner is added.

Cumulated vapor pressure is converted to drought index by the process of curve anamorphosis illustrated in Figure 3 by the dashed lines drawn from 10 on the cumulated vapor pressure scale to moisture content 1.98 on the curve and then to 80 on the drought index scale. This scale divides the range of moisture content into 100 units; the highest moisture content is equivalent to zero and the lowest is equivalent to 100.

The whole range of cumulated vapor pressure was thus converted with the moisture content curves to drought index and tabulated for field use. The variables in the field tables are "yesterday's drought

[1]One unit of cumulated vapor pressure is approximately equal to one day between June 16 and July 15 when air temperature reached 80° F.

index" and "today's temperature." "Yesterday's drought index" is the equivalent of cumulated vapor pressure up to and including yesterday. "Today's temperature" is the basis for bringing cumulated vapor pressure up to date.

The first step in determining accretion of water and reduction of drought index and cumulated vapor pressure from precipitation was to determine the relation between accretion and precipitation. According to data from the Vicksburg Infiltration Project, accretion $= 0.821 \times$ precipitation $- 0.214$. For these calculations, precipitation was divided into size classes, with class means as follows:

Precipitation size classes (*Inches*)	Class means[a] (*Inches*)
T—0.20	0.09
0.21—0.40	0.30
0.41—0.80	0.58
0.81—1.20	0.91
1.21—1.60	1.40
1.61—2.10	1.80
2.11—2.60	2.30
2.61—3.10	2.80
3.11 plus	—

The final step was to prepare accretion tables to go with each of the three depletion curves. The procedure is illustrated by long-short dashed lines on Figure 3. Drought index stands at 80 and a storm in the 0.81- to 1.20-inch class occurs. The moisture content corresponding to drought index 80 is 1.98 inches. The mean for the precipitation class is 0.91 inch. Accretion therefore is:

$$\text{accretion} = (0.821)\ (0.91) - 0.214 = 0.53 \text{ inch.}$$

The new moisture content is therefore $1.98 + 0.53 = 2.51$ inches, which corresponds to a cumulated vapor pressure of 5 units and a drought index of 68. The storm replaced a quantity of water about equal to the quantity expected to evaporate on five 80-degree days in late June.

Similarities between moisture depletion and accretion in soil and in organic materials were emphasized earlier. To verify these similarities, the procedures developed were tested against the moisture in logs that had been weighed periodically at the Priest River Experimental Forest, Idaho. The relation between drought index and the moisture content in logs, shown as a percentage of the dry weight of the logs, appears graphically in Figure 4. Drought index and measured moisture content of the logs are linearly related. The range in drought index is adequate to cover the range in moisture content during a long fire season.

[a]Arithmetic means determined from Southwestern precipitation data.

Rate-of-Spread Index

Rate-of-spread index was designed to rate the spread of fires in their early stages, while still surface fires burning in ponderosa pine fine fuels. The index is determined from the relation of three variables to actual fire spread. The variables are air temperature, wind, and a litter moisture factor.

Records from all of the several thousand wildfires less than 10 acres in size when initially attacked that burned in ponderosa pine fuels on southwestern national forests during 1949-1952 were examined for inclusion in the analysis. Fires were retained if (1) they were attacked within the same burning period (10 a.m. to 6 p.m.) in which they were discovered, and (2) measurements of all weather and fire danger factors to be tested had been measured during the burning period on the same ranger district in which the fire burned. Forty-four fires that burned from 0.3 to 15,820 acres each were left for the analysis.

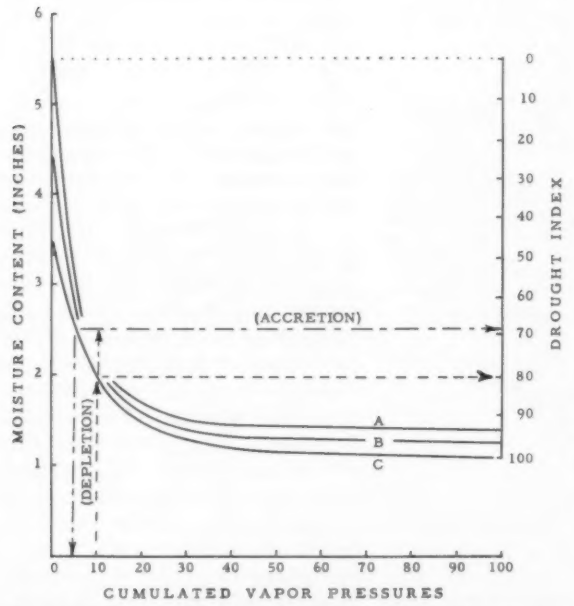

FIG. 3.—Drought index is based on 3 depletion-accretion curves; curve A for a year with 3.51 inches or more of preceding winter precipitation, curve B for 2.51 to 3.50 inches, and curve C for 2.50 inches or less. The suitable curve is used to translate the moisture content—cumulated vapor pressure relation into drought index during either depletion or accretion periods.

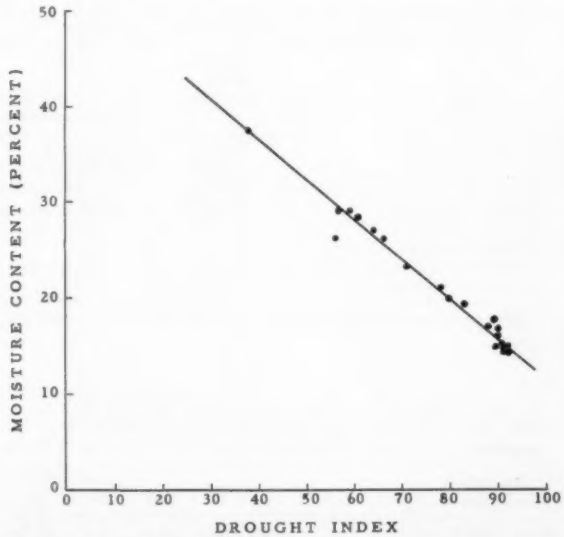

FIG. 4.—Drought index is linearly related to the average moisture content of 6 logs, 6 to 18 inches in diameter, at the Priest River Experimental Forest, Idaho. Data cover the period from April 17 to October 25, 1952.

Estimated area at time of initial attack for each fire was taken from the fire report and transformed into an index of forward spread in feet per minute for the period from origin to initial attack. The index of forward spread was the radius of a circle having the area of the fire at time of initial attack. Indexes ranged from 0.2 to 7.6. This is the equivalent in elongated fires of approximately 25 to 1,000 feet per hour.

The influence of seven independent weather and fuel moisture variables on the indexes was tested by correlation analysis. Weather measurements used were those taken nearest to 1:00 p.m. in the district on which the fire burned. The independent variables were: (1) air temperature, (2) litter moisture factor, which was simply cumulated vapor pressures, (3) wind velocity, (4) relative humidity, (5) drought index, (6) moisture content of fuel moisture indicator sticks (½ inch round dowels), and (7) saturation deficit.

The method of Bruce and Reineke (*2*) was used for the correlation analysis. Results are given in Table 1.

On the basis of both the partial regression coefficients and the variation in rate-of-spread associated with each variable, the first three variables accounted for most of the variation of rate-of-spread. As there was considerable correlation among independent variables, the first two could account for much of the influence of the last four.

A second estimating equation based on air temperature, litter moisture factor, and wind velocity was then computed and tested. In linear form the standard error of estimate was 1.15 feet per minute, only slightly larger than the standard error of 1.07 for the initial linear equation with seven independent variables. Adjustments for curvilinearity reduced the standard error to 0.94 in the equation finally adopted.

The final step was to convert the range in the rate of forward spread of fires to a 100-point scale. Practical maximums and minimums were set for each independent variable. Rate-of-spread index was set at 100 when all independent variables were at the maximums adopted and zero when the variables were at the minimums adopted. The range between was graduated by procedures similar to those used in graduating the drought index scale (Fig. 3).

An envelope-type slide rule was then developed for calculating litter moisture factor, and a circular-type slide rule for calculating rate-of- spread index.

Table 1.—Correlation of Indexes of Forward Spread of Fires with Seven Independent Variables

Variable	Partial regression coefficient	Range of measurements	Variation in index of forward spread associated with the variable[1]
Air temperature	+0.2045	31.0°F.	6.34 feet/minute
Litter moisture factor	+0.1864	17.8 units	3.32 " "
Wind velocity	+0.1043	19.0 m.p.h.	1.98 " "
Relative humidity	−0.0211	89.0 percent	1.98 " "
Drought index	−0.0181	57.0 units	1.03 " "
Moisture content of fuel moisture indicator sticks	−0.0405	19.0 percent	0.77 " "
Saturation deficit	−0.5100	1.37 inches	0.70 " "

[1]Range of measurements times partial regression coefficient (*2*).

Table 2.—Distribution of Large Fires by Fire Danger in the Ponderosa Pine Type, Gila National Forest, 1949-1956. Numerators Are Numbers of Fires 10 Acres and Larger, Denominators Are Numbers of Fires 100 Acres and Larger

Rate-of-spread index	Drought index 65	70	75	80	85	90	95	100	Total
5-15 (low)		1/0	2/0	3/1	6/1	10/0	14/4	3/0	39/6
20-35 (moderate)					1/0	1/0	7/0	3/1	12/1
40-65 (high)							2/1	13/3	15/4
70-100 (extreme)							1/1		1/1
Totals	0/0	1/0	2/0	3/1	7/1	11/0	24/6	19/4	67/12

Performance of the 2-Indexes

The system has been performance tested for five years on southwestern national forests in action involving approximately 10,000 fires. As an example of results, data are given in Table 2 for the Gila National Forest, with a protected area of some 3 million acres of rough and largely wilderness country in southwestern New Mexico, for the months of May, June, and July of 1949 through 1956, except for 1953 for which wind measurements were missing. In the Southwest, practically all serious fires in ponderosa pine have occurred in these three months, and these years had a relatively large number of serious fires.

The importance of drought index is clearly evident in the horizontal totals of Table 2. Fires did not escape early control and develop into 100-acre and larger fires when drought index was below 80. The proportion of large fires increased appreciably above 90. No fires reached 10 acres in size when drought index was below 70.

Likewise, the importance of rate-of-spread index is evident in the vertical totals, although not as clearly because measurements of wind velocity, the only variable not common to both indexes, were not as adequate as the other essential measurements. Wind velocity was measured regularly at only two spots in the vast area. Temperature and precipitation were measured regularly at nine fire danger and Weather Bureau stations. The trend toward a higher percentage of fires that effectively resisted control and went on to become serious as the index increased is evident. Many individual case studies have shown this happens only when rate-of-spread index at the fire is 40 or larger. The seven serious fires listed opposite lower rate-of-spread indexes probably escaped while conditions where the fires burned actually rated 40 or more.

Performance has demonstrated that the 2-indexes when based upon

adequate measurements reliably point out the few bad days each year. With this information available, land management organizations can afford to curtail other activities and concentrate on fire business during bad conditions.

Summary

The 2-index system for rating forest fire danger in the ponderosa pine forests of the Southwest uses two independent indexes: drought index and rate-of-spread index.

Drought index is based upon the moisture content of the top foot of bare soil. Soil moisture is estimated from cumulated differences in vapor pressure of the atmosphere and soil (or larger fuels). Vapor pressure of the atmosphere is treated as a constant within different periods of the year. Vapor pressure of soil or large fuels is estimated from daily air temperature.

Rate-of-spread index is based on the correlation of air temperature, a litter moisture factor, and wind with actual fire spread.

More than five years of use has shown the 2-index system to be a reliable guide for fire control action in the ponderosa pine forests of the Southwest.

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National Forest Multiple Use Committee

A newly formed citizens' committee to advise the Forest Service on National Forest management met for the first time with the chief of the Forest Service, Richard E. McArdle, and his assistants May 2.

The committee was formed to advise the chief of the Forest Service on national policy affecting multiple-use management of national forests. By reflecting general public reactions, this committee is expected to help promote closer relationship between national forest administrators and users.

Members also have been asked for opinions on care and maintenance of the 14½ million acres now in the National Forest Wilderness System.

Individuals were selected for their familiarity with the conservation of forest resources. Dr. McArdle said they will speak as individuals and represent the general public, not any specific organizations or groups though they are active in many. The other main consideration in choosing members was geographic distribution.

Members of the committee will draw lots for one, two, or three-year terms. Future appointments will be for three years. All members serve without pay.

The following committee members have been named:

A. D. Aldrich, director of Florida Game and Fresh Water Fish Commission, Tallahassee, Fla.

John Breckenridge, livestock and farming, Twin Falls, Idaho.

Mrs. J. Campbell Palmer III, St. Albans, W. Va.

Ezra Fjeldsted, secretary manager, Weber Basin Conservancy District, Ogden, Utah.

Charles S. Kelly, attorney and international conservationist, Chicago, Ill.

Hillman Lueddemann, vice president and general manager, Lumber Division, Pope and Talbot, Inc. (retired), Portland, Ore.

William McGregor, McGregor Land and Livestock Co., Hooper, Wash.

William E. Morgan, president, Colorado State University, Fort Collins, Colo.

Samuel B. Morris, Department of Water and Power, Los Angeles, Calif.

Mrs. Robert T. Platt II, Portland, Ore.

William E. Richards, authority on soil and water, Holdrege, Nebr.

Lucian A. Whittle, woodlands division manager, Brunswick Pulp & Paper Co., Brunswick, Ga.

Hugh B. Woodward, attorney and sportsman, Albuquerque, N. Mex.

Guy N. Bjorge, vice president of Homestake Mining Co., San Francisco, Calif.

A fifteenth member is yet to be selected.

Erratum

In the article "Prevention of Insect Damage to Decked Pine Sawlogs in Massachusetts with BHC Emulsion Sprays," by W. B. Becker and H. G. Abbott in the May, 1961 issue, Vol. 59, No. 5, pp. 366-369, two typographical errors occurred in the final paragraph on page 367. The symbol for 1,000 board feet was omitted. The paragraph should read as follows:

"At 1958 prices, the approximate f.o.b. retail cost of the insecticide used to spray these three decks varied between $0.75 and $0.89 per M board feet, the exact price varying inversely with the amount of BHC purchased. Approximately the same amount of water-diluted spray was used per M board feet. . . ."

Relationship of Soil Moisture to the Springwood-Summerwood Transition in Southern Michigan Red Pine

John F. Kraus and
Stephen H. Spurr

THE RELATIVE proportion of springwood and summerwood in the annual ring of coniferous wood relates directly to the specific gravity and strength properties of the wood. The cause of the transition from springwood to summerwood is imperfectly understood, but available moisture supply seems to be one of the factors involved. It has long been suspected, for instance, that a continuation of moist spring conditions will prolong the production of springwood, whereas irrigation begun in the summer months will expand the amount of summerwood. Circumstantial evidence in earlier studies [1,2] has indicated that the drying out of the soil in late spring or early summer as a result of transpiration by trees may well be related to the springwood-summerwood transition.

To test this possible relationship, readings from dial-gauge dendrometers and fiberglass soil moisture resistance units, and subsequent photomicrographs of the annual rings themselves, were obtained for six red pine trees (*Pinus resinosa Ait.*) in the Saginaw Forest, Ann Arbor, Mich., for each of two growing seasons, 1954 and 1955.

THE AUTHORS are, respectively, former graduate student (now U. S. Forest Service) and professor of silviculture, The University of Michigan, Ann Arbor.

This paper is based upon an experiment established by the junior author from which a Master thesis was prepared by the senior author in 1956.

[1]Hill, John L. The influence of rate of cell formation and certain anatomical characteristics on the strength of Connecticut-grown red oak. Yale Univ. unpub. doc. diss. 202 pp. 1954.

[2]Spurr, Stephen H., and Wen-yen Hsiung. Growth rate and specific gravity in conifers. Jour. Forestry 52:191-200. 1954.

The trees, 35 years old at the start of the experiment, had an average diameter breast high of 6.88 inches and an average height of 46.5 feet. They were growing on Miami loam, derived from glacial till of the Cary substage of the Wisconsin glaciation. Beneath the experimental trees, the B horizon of the soil was clay-cemented so that pine roots were confined to the top 12 inches of the soil, this being the average depth of the A horizon.

The mean annual precipitation for Ann Arbor is 30.69 inches a year. Annual precipitation is well distributed throughout the year, being only about one inch per month greater during the summer than in the winter. In 1954, precipitation was 3.95 inches above the mean; in 1955, it was 2.33 inches below the mean.

Methods

Radial increment was measured at breast height on the six trees using the dial-gauge dendrometer.[3] Cumulative radial increment was plotted for each tree and each year. Two tiers of fiberglass soil moisture units were installed at the 1, 3, 6, 12, and 24 inch depths; one adjacent to the six dendrometer stations and one in a trenched (no transpiration) plot. Periodic readings were taken with the Colman meter and converted to percent soil moisture by a calibration curve based on laboratory analysis of soil samples. Moisture readings were weighted by depth of soil theoretically influencing each soil moisture unit. Readings from the twenty-four-inch unit were not used since this unit was placed in a hard clay layer containing virtually no roots and its inclusion would have resulted in generally higher values of soil moisture.

[3]Brown, C. T., Jr., Richard C. Rose, and Stephen H. Spurr. The dial gauge dendrometer as a tool in silvicultural research. Jour. Forestry 45:102-104. 1947.

The time at which the transition from springwood to summerwood took place was determined by a technique involving histological methods and dendrometer measurements. In January 1956 wood blocks were removed from the trees either just above or below the dendrometer stations, but outside the influence of callus formation around the station screws. Each block was sectioned transversely and the sections stained to show the major part of the cellulose and the middle lamella. The stained sections were mounted in glycerine jelly and photomicrographs made of the annual rings of 1954 and 1955.

Using cumulative radial increment curves derived from the dendrometer measurements and the photomicrographs of the transverse wood sections, it was possible to date approximately the time of transition from springwood to summerwood for each tree (Fig. 1). The relation to soil moisture conditions on the same dates is shown in Figure 2.

This procedure involves the assumption that diametral changes outside bark are directly proportional to enlargement of the xylem. The accuracy of dating of the time of formation of any particular cell within the xylem is dependent upon the validity of this assumption, but it is reasonable to expect that the method gives consistent results for all trees in the study and that the relative time of springwood-summerwood transition may be established satisfactorily. Further

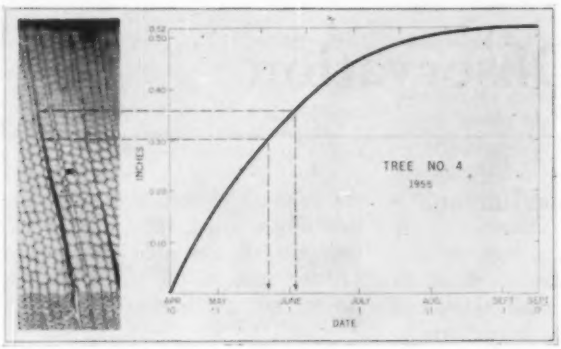

FIG. 1.—Cumulative radial increment of tree No. 4, in 1955, drawn to relative scale of photomierograph of the 1955 annual xylem ring at the same point, showing technique of dating beginning and end of springwood-summerwood transition. Similar curves were drawn for all six trees in each of the two growing seasons.

TABLE 1.—DATES AND DURATION OF SPRINGWOOD-SUMMERWOOD TRANSITION IN RED PINE, SAGINAW FOREST. 1954-1955

	Tree number						
	1	2	3	4	5	6	Mean
1954	Date (month-day)						
Beginning of transition	6-21	7-1	7-12	6-27	6-14	7-1	6-28
End of transition	7-11	7-21	7-17	7-21	6-24	8-6	7-16
Duration (days)	20	20	5	24	10	32	18
1955							
Beginning of transition	5-30	6-6	5-22	5-20	5-30	5-22	5-27
End of transition	6-9	6-21	6-1	6-5	6-9	6-7	6-9
Duration (days)	10	15	10	16	10	16	13

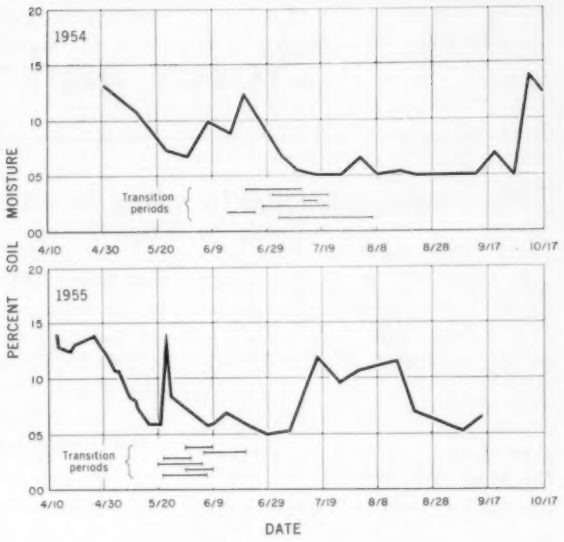

FIG. 2.—Seasonal march in soil moisture percent in trenched (no transpiration) and untrenched plots adjacent to test trees. Bars indicate period of springwood-summerwood transition in the trees. Note correlation between seasonal soil moisture depletion and springwood-summerwood transition.

studies are under way to test this assumption.

Using this method, the dates of the beginning and ending of the springwood-summerwood transition were determined. The first noticeable thickening of the cell wall was taken as the criterion of the beginning of the transition zone; and the point at which the cell wall thickening reached a maximum and became constant for the remainder of the growing season was taken as the end of the transition zone.

Results

The estimated dates of the beginning and end of the springwood-summerwood transition for each of the six test trees for 1954 and 1955 are presented in Table 1, together with the duration of the transition period in days. The transition period for each of the trees is graphed in Figure 2 against the moisture content of the soil.

May rainfall in 1954 was 2.9 inches below normal, but June rainfall was 2.5 inches above, explaining the moisture depletion pattern of Figure 2. In 1955, May and June rainfalls were both below normal and relatively dry except for one heavy rain on May 21-22.

In each of the two years, an apparent relationship existed between the seasonal depletion of soil moisture and the springwood-summerwood transition. In 1954, this occurred late, the soil moisture beginning to decline sharply on June 21 and continuing until July 17 while the average period of the springwood-summerwood transition lasted from June 28 to July 16. In 1955, the period was a month earlier, the soil moisture decline taking place between May 23 and June 9, and the springwood-summerwood transition between May 27 and June 9. The conclusion that the transition in xylem structure may well be triggered by the soil moisture decline seems highly probable.

The transition period lasted an average of 18 days in 1954 but only 13 days in 1955. Trees 4 and 6 had the longest transition period in both years while trees 3 and 5 had among the shortest. Thus, there is some indication that the individual trees have a characteristic transition period. There is no evidence of any consistency in tree behavior, however, with regard to the relative time at which the transition takes place.

Notes and Observation

Need a Reliable Point Sampling Board Foot Factor? —Look in Your Files

In 1955 L. R. Grosenbaugh[1] wrote that southern pine board foot volume per acre could be quickly computed with this equation:

$$V = \frac{(\Sigma H)\ (BAF)\ (60)}{N}$$

Where V = volume per acre int. ¼ inch rule
ΣH = sum of sample tree merchantable heights in 16 ft. logs
BAF = basal area factor of prism (or gauge) used in sample tree selection
N = number of sample points

He then showed how one could determine a board foot factor more valid than "60" from tree measurements in his locality. Frequently foresters, being pressed by daily business, have not found time to measure basal area, tree heights, and tree volumes on representative areas as suggested for this purpose, and as a result point sampling, a valuable tool, may be neglected.

Fortunately, many foresters have in their files all ready to be used all the information necessary for computation of a valid board foot factor. All that is needed is: (1) a stock and stand table and (2) a record of tree merchantable heights by d.b.h. classes. With such data the board foot factor (BFF) may be estimated by rewriting Grosenbaugh's equation as:

$$BFF = \frac{V}{(BAF)\ (\Sigma \hat{n})}$$

Where: $\Sigma \hat{n} = \frac{\Sigma \overline{H}}{N}$, the average number of logs per point, estimated from $GfD^2\overline{H}$ as shown in Table 1.
V = Volume per acre from the stock table.

To show the computation of a factor, attention is called to Table 1 wherein the first four columns include data gathered at Stephen F. Austin State College during a CFI study[2] using conventional plot sampling techniques. The other columns contain computations referred to below. Examining the formula, it can be seen that the volume per acre is the summation of the stock table. The BAF used must fit available instruments (10 for example for a 3.03 diopter prism) and for one average point N would be 1.0. With the exception of the board foot factor, this leaves only one quantity ($\Sigma \hat{n}$) to be determined. In 1952, Grosenbaugh[3] presented the idea that a stand table could be computed from a point sample tree count. In this presentation he called such a count GfD^2, and he said that G was $\frac{.00545415}{B}$ and that B was $\frac{BAF}{N}$; so for a BAF of 10, G would be .000545415 in the present case where N is one. Reversing Grosenbaugh's procedure, the entries in column 7, Table 1 are estimated average numbers of trees per point by d.b.h. classes computed for a BAF of 10, and the values in column 8 are the computed average numbers of 16 foot logs per point. The sum of column 8 is $\Sigma \hat{n}$, a computed average equivalent for $\frac{\Sigma \overline{H}}{N}$ as earlier defined. Inserting

[1]Grosenbaugh, L. R. Better diagnosis and prescription in southern forest management. Southern Forest Expt. Sta. Occasional Paper 145. 27 pp. 1955.

[2]Baker, Robert D., and Ellis V. Hunt, Jr. Continuous forest inventory with punched card machines for a small property. Dept. of Forestry, Stephen F. Austin State College Bul. No. 5. Nacogdoches, Texas. 47 pp. 1960. Illus.

[3]Grosenbaugh, L. R. Plotless timber estimates—new, fast, easy. Jour. Forestry 50:32-37. 1952.

TABLE 1.—VALUES USED TO COMPUTE POINT SAMPLE BOARD FOOT FACTOR FOR SHORTLEAF PINE STAND COMPONENT IN AN EAST TEXAS FOREST—CFI DATA.

D d.b.h. (Inches)	f Trees per acre (Number)	Vol. per acre board feet (Int. ¼ in.)	$\overline{H}$ Av. merch. ht. (16 ft. logs)	D^2	fD^2	GfD^2[1]	$\hat{n}$[2]
10	2.72	154.9	1.75	100	272.00	.14835	.2596
11	2.28	168.8	2.00	121	275.88	.15047	.3009
12	2.28	222.0	2.13	144	328.32	.17907	.3814
13	1.59	208.6	2.31	169	268.71	.14656	.3386
14	1.52	246.4	2.44	196	297.92	.16249	.3965
15	1.33	269.7	2.63	225	299.25	.16322	.4293
16	.84	196.5	2.75	256	215.04	.11729	.3225
17	.56	159.3	2.82	289	161.84	.08827	.2489
18	.39	126.5	3.00	324	126.36	.06892	.2068
19	.10	32.4	3.06	361	36.10	.01969	.0603
20	.05	21.9	3.13	400	20.00	.01091	.0341
21	.00	0.0	3.19	441	0.00	.00000	.0000
22	.05	22.2	3.25	484	24.20	.01320	.0429
Total	---	1829.2	-----	----	------	-------	3.0218

[1]When G is .000545415.
[2]$\hat{n} = GfD^2$ multiplied by average merchantable height.

the values into the equation gives:

$$BFF = \frac{1829.2}{(10)\ (3.0218)}$$

Where: 1829.2 = bd. ft. vol. per acre, Int. ¼ inch rule

3.0218 = ΣH, a computed value equivalent to $\frac{\Sigma \overline{H}}{N}$

10 = BAF

Solving, one finds BFF is 60.53 a point sampling board foot factor applicable to the forest in question.

An analysis of data from another forest in central east Texas (two counties away from the forest partially described in Table 1) yielded 60.3 as a similar factor, thus certainly supporting Mr. Grosenbaugh's factor of 60. Similar factors may be computed for volumes based on other log rules, but discretion must be used and the d.b.h. range must be very small if such inaccurate rules as Doyles are used.

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A Method of Overcoming Seed Dormancy in Subalpine Larch

Subalpine larch (*Larix lyallii* Parl.) seed germinates very poorly or not at all without some treatment. A workable means of artificially reproducing this species by seed is needed.[1] Two previously reported subalpine larch germination tests were unsuccessful because of failure to overcome seed dormancy.[2] Embryo dormancy probably caused these germination failures.

The purpose of the study reported here was to test the effectiveness of soaking subalpine larch seed in a U.S.P. 3-percent solution of hydrogen peroxide as a means of overcoming dormancy. Ching and Parker[3] found that the germination of some coniferous seed was stimulated by removing the radicle end of the seed and immersing the seed in a 1-percent aqueous solution of hydrogen peroxide. Ching[4] reported that germination of Douglas-fir seeds was stimulated by soaking them in a 1-percent solution of H_2O_2 at room temperature for 36 to 48 hours. Hydrogen peroxide also has effectively facilitated quick germination of several agricultural crop seeds.

Seed Collection, Storage, and Extraction

At the end of August 1958, unopened cones were collected from a mature stand of nearly pure subalpine larch near Salmon Peak Lookout (8,900 feet elevation) on the Bitterroot National Forest in northern Idaho.

The cones were stored for 5 months in a warm, dry office. Then the seeds were extracted in a cone shaker, but were not dewinged. The seeds were stored in an airtight container at room temperature.

Five cutting tests of 50 seeds each averaged 55.6 percent sound seed. A random sample of cleaned seed averaged 105,400 seeds per pound.

Germination Test

Three months after seed extraction, 25 lots of 100 seeds each were randomly chosen for the germination test. The radicle end of these seeds was not removed. Treatments consisted of four periods (6, 12, 18, and 24 hours) of soaking in a U.S.P. 3-percent solution of hydrogen peroxide and a control (no soaking). Each treatment and the control were replicated five times. The solution was applied at 6-hour intervals, starting with the 24-hour soaking treatment, so that all treatments would be completed at the same time. After the seeds had been covered with H_2O_2 the containers were sealed and left at room temperature. At the end of the soaking period, the H_2O_2 was poured off and the seeds placed on moist blotting paper in Petri dishes. No fungicide was used.

The Petri dishes were arranged in a 5x5 latin square. Water was applied to the blotting paper when needed. Temperatures ranged from 63° to 68° F. Germination was counted daily for the first 22 days,

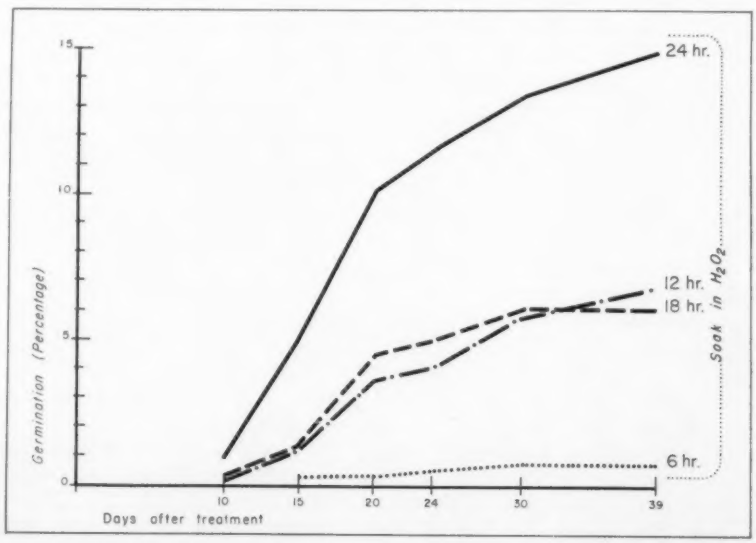

FIG. 1.—Cumulative germination of subalpine larch by length of treatment.

[1] U. S. Forest Service. Woody plant seed manual. U. S. Dept. Agric. Misc. Pub. 654. 416 pp. Illus. 1948.

[2] Op. cit. p. 216.

[3] Ching, Te May and M. C. Parker. Hydrogen peroxide for rapid viability tests of some coniferous tree seeds. Forest Sci. 4: 128-134. 1958.

[4] Ching, Te May. Activation of germination in Douglas-fir seed by hydrogen peroxide. Plant Physiol. 34:557-563. 1959.

TABLE 1.—GERMINATION OF TREATED LARCH SEEDS BY TREATMENT TIME[1]

Treatment time (hours)	Germination in each dish					Average germination
	—— Percent ——					Percent
6	0	1	1	1	1	0.8
12	4	5	7	8	9	6.6
18	4	6	6	6	8	6.0
24	5	6	9	22	28	14.0

[1]Control had no germination.

then every alternate day until the end of the test. Seeds with radicle emergence of 2 mm. or more were counted as germinated. Two abnormal germinates (cotyledons emerged from the seed before the radicle) were excluded from the analysis. A cutting test of ungerminated seed was not made.

Results and Discussion

This test showed that soaking subalpine larch seed in H_2O_2 effectively overcame dormancy. The degree to which dormancy was overcome increased with soaking time (Fig. 1).

During the 39-day period, no seeds germinated in the control dishes, and only one embryo swelled enough to break the seed coat. Germination increased with length of soaking, but the 12- and 18-hour treatments showed little difference.

Table 1 shows the variation of germination in each dish containing H_2O_2-soaked seeds. The reason for the large variation in the 24-hour treated seeds is not known. Possible contributing factors are (1) inherent variation of the samples, (2) influence of mold, and (3) a soaking period too long for the concentration of H_2O_2 used.

Analysis of variance showed no significant differences in the rows or in the columns of the latin square. The difference between treatments was highly significant. The partitioned treatment sum of squares revealed a significantly greater germination in the 24-hour soaked seed than in seed soaked for shorter periods. Significantly more seeds germinated after the 12- and 18-hour treatments than after 6 hours or the control. All other comparisons were nonsignificant. The standard error of the mean was $\pm$ 2.1, and the coefficient of variation was 87.1 percent (largely due to the 24-hour treatment).

Summary and Conclusions

1. Subalpine larch seed must be treated to assure germination.

2. Soaking subalpine larch seed in a U.S.P. 3-percent solution of H_2O_2 promoted germination. The percentage of germination depended on the length of time the seeds were soaked. Although the 24-hour soaking stimulated the greatest average germination, it had the greatest variation among the replicates.

3. Because this is the only treatment that has effectively overcome dormancy in *Larix lyallii*, further experiments should be conducted to establish an optimum soaking schedule and to seek other ways of stimulating germination.

4. This treatment can be performed in a short time by personnel inexperienced in seed testing.

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Safety Training at Paul Smith's College

Forestry training at Paul Smith's College, Paul Smiths, N. Y., is unique in the amount of practical field work done by students, and in the emphasis placed on safety. This applies to the preprofessional course as well as to the terminal course which prepares students for immediate employment in forest industries. Both are two-year programs, but the terminal man receives more field training in the harvest and manufacture of wood products.

Student laboratories include these hazardous jobs:

Use of edged tools—axe, crosscut and buck saws.

Use of power tools—chain saws, sawmill equipment.

Movement of heavy objects—timber felling, skidding, log rolling, pulp loading.

Construction of log-crib dams and bridges.

During the past academic year our students spent 17,200 manhours in the harvest, transportation, and manufacture of wood products. This is equal to 2,150 man-days. Over the past eleven years some 20,000 student mandays have been spent doing this type of work. Safety training is essential to maintain the health and welfare of students and graduates. It is also necessary to produce a well-trained and efficient worker.

The entering freshman is normally inexperienced. So our program must start with fundamentals. The first course—Introduction to Forestry—includes a four-hour lab each week in which the student is taught to use axe, crosscut, buck and power saws, and to skid with a horse. The work is primarily timber stand improvement, but the first emphasis is on safe working techniques. Each student must have a safety hat, steel-toed boots, and an axe with sheath. The individual items are inspected and graded. Safety training continues with safety films from equipment manufacturers, wood-using industries, and governmental agencies. Lectures and demonstrations by manufacturers' representatives are regularly scheduled. All instructors are responsible for safety supervision, and their inspections and comments form the basis for a field grade which is incorporated with test scores to arrive at a grade for the course.

The safety program has paid dividends. Hard hats and hard toes protect the extremities. They also make a man safety conscious. We have averaged about three foot cuts each year that required a doctor's attention. The most serious accident occurred in a silviculture lab when a student tore knee ligaments while skidding with a horse. Fortunately, this accident caused no permanent injury. Hard hats have saved two students from fractured skulls. One was engaged in fire mop-up as a member of a state fire crew. The other was limbing a pine when a lodged branch fell from an adjacent tree. Both accidents were reported to The Turtle Club and the E. D. Bullard Co.

sent the men involved Turtle Club hats and lapel pins. These items were presented at forest assemblies in conjunction with safety critiques.

Our safety critiques are designed to teach the neophyte forester to:

Keep equipment safe;

Think safe;

Work safe;

Be alert and anticipate hazards. The cost of accidents is emphasized and tied in to each forestry subject. The student is taught that only the safe worker is worthy of his hire and that accidents don't "just happen"—they are caused.

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Development of Shortleaf Pine Seedlings in Seeded Spots

Sowing enough seed to obtain several seedlings per spot may contribute to the success of direct seeding shortleaf pine in the Missouri Ozarks. Seeding trials begun in 1941 and 1942 on the Mark Twain National Forest show that this practice promotes good stocking and growth.

The Study

The seedings were made on three separate upper slopes that supported low-quality hardwoods. The soil on all three areas is Clarksville stony loam. All hardwoods were killed by girdling at the time of seeding. Seed spots 18 inches in diameter were prepared by removing the litter and cultivating the top 2 to 3 inches of soil. Fifteen pine seeds were sown per spot; about 75 percent of the seeds were filled. A total of 108 spots were seeded in December 1941 and 108 spots in December 1942.

Results

Almost 97 percent of the 1941 seeded spots and 69 percent of the 1942 spots were "stocked" (contained 1 or more live seedlings) in the spring of the first year. At that time, the number of seedlings per stocked spot averaged 5.8 and 3.5 for the 1941 and 1942 seeded spots, respectively.

The more seedlings established per spot the first year the greater the chance that spot would remain stocked in succeeding years (Table 1). For both years of seeding, 80 percent or more of the spots that had at least 3 seedlings in the spring of the first year were still stocked in 1956. In contrast, only 44 and 62 percent of the spots that initially had 1 or 2 seedlings were stocked in 1956. Enough seed should be sown per spot, therefore, to attain a minimum of 3 seedlings per spot by the spring of the first year.

Although several seedlings developed in some spots, stagnation was not a serious problem, mainly because in most of these spots one tree soon attained, and maintained, dominance over the other trees in the spot. This was evident in some spots the first year after seeding (Fig. 1). As early as 1945, one tree had attained complete dominance

TABLE 1.—PERCENT OF SPOTS REMAINING STOCKED THROUGH 1956 AS RELATED TO INITIAL SEEDLING DENSITY, BY SEEDING YEARS

Seedlings per stocked spot (number)	1941 seedings		1942 seedings	
	Total spots	Stocked spots	Total spots	Stocked spots
	Number	*Percent*	*Number*	*Percent*
1-2	13	61.5	32	43.8
3-5	45	84.4	30	80.0
6-8	25	96.0	10	90.0
9+	21	100.00	3	100.0

FIG. 1.— One seedling is definitely dominant at the end of the first year in this multiple-stocked spot. The height of the tallest seedling was found to be directly related to the number of living seedlings in the spot.

in half or more of the stocked spots. And by 1956, 66 percent of the 1941-seeded stocked spots and 90 percent of those seeded in 1942 had dominant trees. Because of this, the need is reduced for an early non-commercial thinning of stems within multiple stocked spots, often cited as an argument against starting several seedlings per spot.

Within the limits of this study, the more living trees in a spot the greater the height and diameter of the tallest tree in that spot. However, it was not possible to separate seedling density effects from other microsite effects on growth so it was not known how much of the above relation was spurious. Although other studies indicate that seedling density may have some direct influence on growth, it is more probable that a greater number of seedlings per spot simply means more chances of one seedling being an inherently fast grower.

Conclusions

Successful direct seeding of shortleaf pine may be possible if enough seed is sown to insure the initial establishment of several seedlings per spot. The chances for spots to remain stocked after the first year are directly related to the initial number of seedlings per spot. Because generally one tree soon becomes dominant regardless of how many seedlings in the spots, there is little need for concern about over-stocked spots. There are indications, however, that growth of dominant trees is best in the more densely stocked spots.

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and FRANKLIN G. LIMING
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The Columbia research center is maintained in cooperation with the Agricultural Experiment Station, University of Missouri.

More on a Simplified Method of Computing Cordwood Volumes in the Woods

Jim Dale's recent article[1] presents a simple, ingenious method for computing the cordwood volume of individual trees. The writer believes he has simplified the method further and made changes so that it may be easily tailored to any volume table.

[1]Dale, Jim E. A simplified method of computing cordwood volumes in the woods. Jour. Forestry 59:191-193. 1961.

Dale's formula for cords is

$$\frac{\text{Summation factor} \times \text{total height} \times 5}{1000}$$

The summation factor is a close approximation of basal area. The fraction 5/1000 reduces cubic feet in a cylinder, the height of which is total tree height, to cords in a tree. The fraction may be expressed 1/200.

Instead of using Dale's summation factor, we may get basal area by $.005454D.^2$ D is easily squared in our heads—up to a point. We have now

$$\frac{.005454D^2 \times \text{total height}}{200}$$

or $D^2 \times$ total height $\times .00002727$ or, more simply, $D^2 \times$ total height $\times$ 27 with the notation that we must point off six places in the product.

Table 1.—COMPARISON OF VOLUME IN STANDARD CORDS BY THREE METHODS

D.b.h.	Vol. table	Dale	"27"	"28"
		All trees 50 feet high		
4	0.27	.02	.022	.022
5	.037	.03	.034	.035
6	.054	.05	.049	.050
7	.068	.07	.066	.069
8	.091	.09	.086	.090
9	.115	.11	.109	.113
10	.140	.13	.135	.140
11	.171	.16	.163	.169
12	.198	.19	.194	.202
13	.237	.22	.228	.237
14	.275	.26	.265	.274
15	.312	.30	.304	.312

Table 1 gives a comparison of cord values from the Virginia pine volume table in Dale's article, from Dale's method, and from the method here explained. The table shows that we attain closer agreement with this particular volume table by using 28 instead of 27. This is the "tailoring" mentioned in the first paragraph.

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Points of View

Should a Consultant Engage in Product Purchasing?

I have read with great interest the series of arguments for and against the registration of foresters published in the JOURNAL. Although I have always felt that the policing of the profession for the protection of the general public should be in the hands of the Society instead of the hands of a state board, I applied for and attained a license from the two southern states as a matter of self-preservation. However, it seems to me that the Society could very well do some policing for the benefit of the general public and that by failing to do so, it does not quite do its duty.

I am particularly concerned about the publication of lists of consulting foresters which takes place every January and the professional cards carried in every issue of the JOURNAL by at least some of these consulting foresters. The annual list shows the various fields of specialization for every firm, and it is difficult for me to tell exactly what form this specialization takes. For instance, one of the consulting foresters lists as one of his fields of specialization number 13, pulpwood operations. I know from long experience with him that he is a pulpwood dealer for one of the large paper companies, and I do not see how you can be a consulting forester and be a purchaser of any forest product whatsoever. In my opinion, this automatically puts you on both sides of a trade and involves you in a very definite conflict of interest. No lawyer can represent both sides in a law suit, and yet here is a consulting forester who recommends forest management programs which involve pulpwood cutting and very often winds up as the buyer also. Even though he complies with paragraph 10 of the Code of Ethics by making full disclosure of his position to his client, he is still on both sides of the trade, and I think this is a very unsatisfactory situation for the profession as a whole. In the 10 years I have been in business, I have seen a very regrettable incident which arose just 30 miles from me as a result of this practice, and even today, some four or five years later, the term "consulting forester" is a bad word there. I feel so strongly about this conflict of interest that I have absolutely refused to have anything to do either directly or indirectly with the purchase of any forest product whatsoever, and I have told all of my foresters that their first adventure along this line will be cause for instant dismissal.

Perhaps I am making a mountain out of a molehill, but I believe that the Society should refuse to list as consulting foresters any firms which are connected with the purchase of forest products.

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Value of Licensing Questioned

Having just returned from the Columbia River Section meeting in Salem, Oregon, where the members spent the better part of two hours trying very hard to convince themselves they want to be registered and licensed, I am moved to try to express my views. Being located here on the edge of the Pacific Ocean we were not privileged to have been "brain washed" at Chapter meetings, etc., prior to the Salem session. About the only voices heard at Salem in opposition to the proposed registration and licensing of foresters came from those of us in the hinterlands, too far away and, the proponents hope, too few to matter.

Looking back on the meetings I have attended in the past few years that have discussed this topic, I find myself wondering, "How did this ever get started?" and more important to me now, "How to stop this snowball?"

One of the principal reasons advanced by the proponents at the Salem meeting, and others I have attended, for being in favor of the idea is basically "that everybody else is doing it and we darn well better not be left out in the cold." We should decide for ourselves rather than be like a herd of cattle.

As stated by Archie E. Patterson in the April 1961 issue of the JOURNAL OF FORESTRY, the purpose of all registration and licensing acts must be the "benefit and protection of the public." At every discussion I have heard by the proponents of this project, they too make this statement and then proceed to tell us why we need it, not for the benefit and protection of the public, but for the benefit of the profession.

In my opinion we are making about as big a mistake as possible in this attitude and line of thinking. The Society Code of Ethics, which we all as members agree to adhere to, may be stated in these simple terms, "We agree to be honest in all our dealings with the public and others in our chosen profession." Of course this is my own idea of what most of the Code of Ethics boils down to, and in my opinion we violate our Code of Ethics and its true meaning every time we speak or write of benefiting and protecting the public when in reality we do not mean it.

I say this—if there is a need to protect and benefit the public, let the proponents show that need by facts and not by oration. If that need can be shown I do not believe there are many opponents, myself

included, who would not look with more favor on this subject.

There are other objections I have to the idea which I should like to voice: (1) It creates another governmental control agency in our already overcontrolled life; (2) Eventually it would place us, as a profession, smack in the middle of the political arena, and while I heartily endorse the Society and its members taking a stand on policy matters, I do not want us in politics where our profession, with its varied facets, could very easily become a "football"; (3) Besides putting us *by statute* on a par with the medical, legal and engineering professions, registration and licensing would also put us on a par with plumbers and electricians, who while they make more money than most of us, are hardly the "professions" we are trying so desperately to emulate.

I should like to quote from *The Appraisal of Real Estate*,[1] "Public regulation does not create a profession. License laws are merely effective as a means by which the professional group, already formed through self-initiative, maintain minimum standards of competency and integrity. Such regulations are useful *only* (italics my own) in curbing the selfish activities of the marginal members."

It is my contention that we already have the machinery to police ourselves in the Society and our Code of Ethics. We would be better off professionally to promote our p r o f e s s i o n by professional work, acts, and deeds, and be a little more honest with ourselves about our objectives in this whole problem of how to secure public recognition of our chosen profession. In this way we can make the title "Forester" mean something to the public and create the desired "public image."

ALLEN W. NEFF
Newport, Ore.

[1]The Appraisal of Real Estate, 3rd Ed. American Institute of Real Estate Appraisers.

Cottonwood in Northeastern Missouri

(Cover Photo Story)

Cottonwood has aroused the interest of foresters for years because of its rapid growth and the variety of industrial products for which it is used. Interest in cottonwood management has been accelerated by its increased use for fiber board and paper.

Major studies of cottonwood have been made in the lower Mississippi River valley and reports made in two excellent publications[1] by the Southern Forest Experiment Station. Relatively little work has been done in the upper Mississippi valley. However, here too, cottonwood demonstrates its remarkable potentialities.

In the years 1946 through 1951, 200 acres were planted with cottonwood seedlings and cuttings on the DuPont State Forest near Hannibal, Missouri. Planted on Wabash silt loam (site index 112) the 1-0 seedlings were spaced 6 x 10 feet. Cuttings were also tried but survival was limited to 20 percent because of rank weed growth and record floods in 1946 and 1947. Seedling survival was good and 14 years later these trees averaged 8.94 inches in diameter with the average dominant tree being 82 feet tall. The 232 trees per acre surviving had a basal area of 102 square feet and contained 20.97 cords.

Experimental t h i n n i n g plots were established in the stand when it was 8 years old. Results of this work are reported in "Thinning Eastern Cottonwood in Missouri."[2] At that time a stand of 385 stems per acre with a basal area of 86 square feet and a volume of 8.17 cords per acre was reduced to 192 stems per acre with a basal area of 57 square feet and a volume of 5 cords.

Basal area on the 180 trees remaining on the thinned plots at the end of 6 years had increased to 102 square feet (compared to 108 sq. ft. on unthinned plots). Volume had increased to 20.29 cords per acre (compared to 20.97 cords on the unthinned area).

A commercial thinning was made on the main stand in 1960. Basal area was reduced to 45 square feet when 9.25 cords per acre were harvested.

Observations indicate that with suitable markets cottonwood plantations on the upper Mississippi can be commercially thinned when they are 8 years old. Maximum basal area increment can best be maintained by thinnings at 3-year intervals thereafter. Each thinning in these early years can sustain a cut of 3 to 4 cords per acre.

JOHN E. WYLIE
Missouri Conservation Commission, Jefferson City

[1]Broadfoot, W. M. Field guide for evaluating cottonwood sites. Southern Forest Expt. Sta., Forest Service, U. S. Dept. Agric. Occasional Paper 178. 1960.
Maisenhelder, Louis C. Cottonwood plantations for southern bottomlands. Southern Forest Expt. Sta., Forest Service, U. S. Dept. Agric. Occasional Paper 179. 1960.

[2]Neebe, David J., and Peter W. Fletcher. Thinning eastern cottonwood in Missouri. Agric. Expt. Sta., University of Missouri, Columbia. Research Bul. 733. 1960.

Book Reviews

Elements of Photogrammetry

By Wilfred H. Baker. 199 pp. Illus. The Ronald Press Co., New York. 1960. $5.

Written as an elementary text in photogrammetry for civil engineering students, this modest volume lays primary emphasis on the taking of aerial photographs, their geometry, and their use in mapmaking. Attention is particularly centered on stereoscopy and tilt analysis with three of the thirteen chapters being concerned with tilt. While it is probably a satisfactory treatment for engineering students, the book appears quite unsuited for foresters.

The different viewpoints of the engineer and the forester are well illustrated by comparing Prof. Baker's text with Spurr's *Aerial Photographs in Forestry* or its recent revision, *Aerial Photogrammetry and Photographic Interpretation* by the same publisher. The engineer is interested in aerial photography as an adjunct to surveying and mapmaking and his attention is centered on problems of measurement accuracy and mapping technique. The engineer photogrammetrist to attain the high precision and accuracy he needs has developed various topographic plotters and other expensive instruments.

The forester in contrast needs training of a broader scope. While he should know how pictures are taken and the fundamentals of photogrammetry, his measurements are generally of a lower degree of precision and he has devised an array of simple instruments for linear and area measurement and for determining spot elevations. Unlike the engineer, the forester is much concerned with photographic interpretation and with all aspects of picture quality that affect interpretation. Prof. Spurr gives primary emphasis to interpretation while Prof. Baker pays no attention to films and filters and other quality considerations and treats applications other than mapmaking with extreme brevity.

For the forester, I believe the principal use of *Elements of Photogrammetry* is as a reference for the study of stereoscopy and tilt. The text is well illustrated with photographs and line drawings and the writing is clear. There are few references to other authors, however, and no bibliography.

JOHN CAROW
University of Michigan, Ann Arbor

Key to Important Woody Plants of Eastern Oregon and Washington

(Agricultural Handbook No. 148, U. S. Department of Agriculture.)

By Doris W. Hayes and George A. Garrison. 227 pp. Illus. U. S. Government Printing Office, Washington 25, D. C. 1960. $2.

The authors have prepared a key to the woody plants of this region that fills the need of foresters, range managers, wildlife biologists, recreationists, and interested laymen who may not have the advantages of formal training in systematic botany. At the same time, it is useful to the professional when he identifies woody plants during seasons of the year when flowers, fruits or leaves may not be present.

The authors state their objective thusly: "Winter, spring, summer, and fall, big-game biologists, forest rangers, hunters, and recreationists are on the mountain trails of eastern Oregon and eastern Washington. Regardless of season, shrubs are always conspicuous to these travelers. And in the work of game biologists and rangers, knowledge of browse plants at all seasons is becoming increasingly important. Hence, a demand has arisen for a shrub key based on twig or leaf characters and prepared in laymen's language. This key represents an attempt to meet that demand."

Essentially, this is a vegetative key dividing the approximately 180 shrubs into three groups: (1) plants deciduous—spring and summer, (2) plants deciduous—fall and winter, and (3) plants evergreen or with winter-persistent leaves. Thus, it prepares a base for identifying shrubs at any time of the year. Deciduous plants are described by their distinguishing characteristics both with and without leaves, and are included in two categories in the key. There are some exceptions to this dual listing where the plants in their deciduous state are carried only to the genus, Salix, for example.

The key includes excellent photographs and scientific drawings of the more important species. "Standardized Plant Names" nomenclature has been followed throughout. This has been cross-referenced to names used in local manuals or floras commonly consulted in this area. The local common name is included whenever available.

The authors point out that vegetative keys require definition of many characteristics for each species; hence lengthy descriptions. This is true, but this reviewer does not believe it detracts from the usability of this key.

A section on the forage value of the principal shrubs is appended. This will add much to the usefulness of this key by the range or wildlife specialist.

The key is well annotated to cover special features and supply clarifying information. The bibliography of works consulted covers all the publications that this reviewer is aware of.

People with a variety of needs and interests will find this key

(Continued on page 522)

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both accurate and easy to use. It is certain to meet with considerable favor, not only in the region for which it was especially arranged, but for general use throughout the ranges of the plants included. The resource manager in eastern Washington and Oregon will carry this publication in his field kit and refer to it constantly.

The authors have been eminently successful in accomplishing their objective.

JOHN P. NAGLE
Washington State University, Pullman

❦ ❦ ❦

Private Grazing and Public Lands

By Wesley Calef. 292 pp. Illus. University of Chicago Press, Chicago, Ill. 1960. $9.50.

This is a report of the administration and the management of the nation's remaining open public domain under the Taylor Grazing Act of 1934. The author spent parts of the period 1949-1958 on field work in Wyoming, the sample locality for the study.

Professor of geography at the University of Chicago, he is an expert on rural land utilization. A midwesterner, he states as the principal aim of his investigation "to provide reliable observations and information primarily for those easterners with whom the responsibility rests . . . concerning how we—the people of the United States —should act with respect to (these) grazing lands."

Easterners, as well as westerners, should find much in the book to displease them about this land management enterprise. It is summarized in the following quotation:

> It is difficult to avoid the conclusion that national policy with respect to the public domain for the past seventy-five years has been a disappointment. As citizens we can take pride in our reservation policy for the national parks, the national forests, wild life refuges, and reclamation and power projects. But our policies of disposal and management of the public domain present the opposite picture. Federal land policy has satisfied neither the proponents of state ownership nor the advocates of federal management or private ownership; neither easterners nor westerners; neither cattlemen nor sheep ranchers; neither the range livestock industry nor the conservationists. Federal management has produced little revenue, has not benefited the West in any fundamental way, has done relatively little to strengthen and stabilize the western range livestock as the Taylor Grazing Act directed. Under federal management the range lands and their plant cover have not been properly protected and conserved. Public domain land disposal has not met the test of justice, because alienation has been arbitrary, often fraudulent, and marked by opportunism and favoritism. . . .

There is noticeable absence of reference to the many employees of the Bureau of Land Management who are loyal, hardworking, dedicated people doing a creditable job considering all the adverse circumstances, and who, no doubt, would do much better if they had the funds and work facilities they need and the leadership they should have from Washington.

The dominance of the stockmen in administration is given prominence. Since the Taylor Act was passed, western livestock interests have sought to tighten and extend their influence. The battle lasting for several years before 1947, while apparently fought over grazing fees, fee distribution, and appropriations, is described as actually to decide the question whether or not the Department of the Interior would manage these lands in strict conformance with the views of the Grazing District Advisory Board, their state and national counterparts, and the major livestock associations. "The contest ended in a complete victory for the western range livestock interests." The defeat of the Department resulted "in the necessity for (the BLM) to follow an extremely soft line in its dealing with the ranchers whose operations on the federal lands it is supposed to be regulating."

The book, in the opinion of this reviewer, might well have pointed out that the victory of the stockmen lies largely at the door of Congress. Also it might well have been pointed out that the erroneous testimony given at the hearings on the bill by Secretary Ickes, to the effect that the act would cost very little to administer, into which testimony he was misled by his subordinates, was long used effectively to defeat the necessary appropriations.

The positive benefits of the Taylor Act are stated to be chiefly its stabilizing effect on the use of the range. Mostly, however, the authorized users of the range, it is said, graze it much as they see fit even to the extent of some of them committing more or less trespass with impunity under the "soft" enforcement policy of the BLM.

Among the recommendations are the provision of adequate research necessary for good range management; improving standards of range management; simplifying and consolidating the federal ownership pattern through exchange, disposal, and acquisition; and increasing grazing and lease fees to compare favorably with commercial rates. The outstanding recommendation, however, is for a long range program of federal land adjustment based on the principle that the federal government should retain or acquire only those lands that should be held for specific public purposes and should dispose of all the remainder that is suitable for private ownership.

It should be obvious to the reader that the "soft line" followed in the administration of the public domain since 1947 has not brought desirable results. The recommendations merit consideration. Possibly the book will help persuade enough of the great bulk of citizens, who live in the states east of the Rocky Mountains and out of the influence of the western range livestock industry, to get Congress to enact a suitable program for the open public domain lands.

CLARENCE L. FORSLING
Albuquerque, N. Mex.

Financial Management of Large Forest Ownerships

Papers presented at the Thirteenth Industrial Forest Seminar. Bulletin No. 66. 124 pp. School of Forestry, Yale University, New Haven, Conn. 1960. $2.

That forestry has grown beyond being an applied branch of the biological sciences is emphasized by the published papers of the thirteenth in this series of seminars. These papers are the first from the series to be printed, and Z. W. White and the rest of the Yale faculty are to be complimented on making these a permanent part of forestry literature.

This bulletin reflects the changed status of the industrial forester as have few previous publications. The papers present a mature view of how the modern forester, when responsible for the management of a large industrial woodland, must be able to foresee the impact of his decisions on the production program and financial structure of the entire concern, rather than on the timber department alone. His requests for operating funds must compete with the needs of all other parts of the firm, and he must understand and be understood by accountants, lawyers, and production engineers, as well as by other foresters.

All the papers reflect the general acceptance of expected rate of return on invested capital as the principal criterion for selection between investment possibilities, subject to secondary conditioning factors. The excellent introductory article by John Fedkiw, economist with the U. S. Forest Service, on "Capital Budgeting for Acquisition and Development of Timberlands" presents a comprehensive scheme for using rate of return to rank timber investments among all the alternatives of a large wood-using concern.

The reader is disappointed in seeking an average level which might be used as a general or "market" rate of return which timber investments today must yield to compete successfully for the funds of a large wood-using industry, for the guiding rates cited range from 4.5 percent to 10 percent. The survey of "Earning Capacities and Growth Rates of Selected Wood-Using Industries for the Period 1945 Through 1958," by Walter H. Meyer, professor of forest management at Yale, shows a range in averages over the fourteen years from 5 percent to 12 percent. Partly accounting for the lack of agreement on required earning rate is the recognition of the "strategic" or "protection" value in timber and an inclination to accept a lower rate of return on timber investment than on others.

C. G. McLaren and J. A. Segur give revealing analyses of the long-range financial planning process used in their respective companies, Owens-Illinois and Riegel Paper. They both show a willingness to use projections of upward price trends and downward availability trends of open-market wood.

The impact of income tax regulations and the need for foresters to understand them is emphasized throughout, but especially by Meade Whitaker, attorney, and Henry I. Barclay, Jr., C.P.A., in their papers "Income Tax Problems of Large Forest Properties" and the "Tax Effects of the Form of Ownership."

They explain the tax aspects of long-term timberland leases, management contracts, timber purchase agreements, and point out possible applications to timberland owners of the "electing small business corporation" classification set up in 1958. Foresters especially concerned with the question of whether or not planting costs should be capitalized will be interested in Mr. Whitaker's comments in favor of capitalization on page 75.

All foresters concerned about the future prospects of the profession should read William L. Moise's paper on "Factors Which Attract Equity and Borrowed Capital to Timberland—The Investor's Viewpoint." He shows that there has developed in the central money markets of the country a recognition of woodlands as a potentially attractive investment. But perhaps more significant is his statement that the most important concern of the potential investor is confidence in the character and "demonstrated capacity" of the people who will have to carry through the project in which the funds are invested. Thus he brings out the responsibility of the forestry profession to earn and sustain this confidence.

O. F. HALL
Purdue University, Lafayette, Ind.

Land of the Snowshoe Hare

By Virginia S. Eifert. 271 pp. Illus. Dodd, Mead & Company, New York. 1960. $4.

By writing a descriptive book about the North Country, Miss Eifert joins a formidable group of well-known writers who have been doing this for some time. She could not have done so successfully if her book were not distinctive from the others. *Land of the Snowshoe Hare*, however, does stand out from other popular books about the northern Lake States by the emphasis on care and accuracy with which plant and animal species and natural phenomena are named and described. The book will find its most appreciative readers among amateur and professional biologists to whom the names of plants, birds, mosses, fungi, etc. can conjure up vivid images. Each species is beautifully described, in its proper ecological niche, with contagious enthusiasm. Natural phenomena are explained with simplicity and completeness. Excellent examples are two chapters titled "Glacier Country" and "The Long Spring." These describe the Ice Age and the recession of the last glacier so graphically, including the myriad effects on plant and animal life, that the reader feels he has just seen a time-lapse movie of several hundred million years, on wide screen, in technicolor and three-dimension. The chapter "The Light of Day" similarly gives ecological depth and meaning to photoperiodism. Nowhere is accuracy sacrificed for drama.

The setting of the book is northern Wisconsin, but with the exception of a few place names most of the material covered could easily

be found in forests of any of the northern Lake States. Twenty-seven chapters or essays are included containing thoughts, observations, and explanations of various habitats, season by season. A section of two dozen glossy photographs is included. Perhaps more such pictures, interspersed with the text, would have improved the book.

Miss Eifert's book should be enjoyed by most readers with knowledge of and enthusiasm for nature. It can be recommended as entertaining reading to foresters or other biologists who have been confined too long to desk jobs, and to anyone who has become so absorbed with one aspect of biology that he feels he has lost a feeling for the whole. Even the best informed will certainly find some insights and explanations which have escaped him.

ISABEL F. AHLGREN
Duluth, Minn.

Choice of Tree Species

Food and Agriculture Organization of the United Nations. (FAO Forestry Development Paper No. 13.) 307 pp. Illus. Rome, Italy, 1959. $3.50.

The innocuous sounding title of this bulletin, a section of the World Forest Planting Manual, belies the wealth of information and wisdom between its paper covers. Here is a compendium of experience and research on a global scale generously laced with astute observations by authors obviously familiar with their subject. The topics discussed require careful reading to appreciate some of the explicit thoughts written with a casualness that could otherwise dilute their usefulness and application. Written by Professor Sir Henry Champion, past head, Imperial Forestry Institute, University of Oxford, and N. V. Brasnett, this manual was reviewed by authorities from four continents. The authors have drawn on their intimate and extensive knowledge of forest planting throughout the world to set down clearly the objectives, the business, the principles, and examples of plantations.

These topics are treated in three parts or headings. Under "General" are discussed the planting site, objectives of the plantation, possible exotics for trial, use of mixtures, production data, plantation techniques, costs of planting, effect of plantations on the site, regeneratives for further crops, and experimental work. Under Part 2, "Ecological Principles," are set forth general relations between climate and vegetation, classification of the major vegetation types of the world, relation between topography, soil, and vegetation, floristic considerations, regional climates and vegetation, application to representative sites, tropical lowland climates, tropical highland climates, and temperate and subtropical climates. Part 3, "Selected Species," provides a survey, reinforced with some striking facts, of the most recent information about the four most widely planted exotics. The bulletin concludes with 352 selected references to scientific work and textbooks from many countries.

Many facts and sobering thoughts in this publication merit pause and reflection. The documented examples are interesting and impressive. This is true of both the silvics and silviculture of plantations. For example, discussing the effect of monoculture on site of Norway spruce plantations in Germany, the authors state: "There can be no question that the nature of the soil plays a very important role, and, in fact, on favorable soils little or no deterioration may take place." And again, but referring to teak plantations: ". . . sites which were not entirely suitable have been planted, and often the details of the execution of the planting technique were demonstrably at least important contributory factors to the unsatisfactory development of the later crop." Silviculturally, "As with all other forms of (strip) mixture a continuous management should be carefully adhered to, and all thinnings should be carried out regularly by *trained* and *experienced* foresters". (reviewer's italics). Under "Provenance," "In a given site, one race of a species may be a complete failure, and another a striking success."

The extent of successful planting of forest exotics throughout the world, which has been based, to a great degree at least, on the thorough search and careful appraisal of prospective introductions, is remarkable. For example, more than 1,000,000 acres of *Pinus radiata* are growing in our continents and at least 320,000 acres of *Eucalyptus globulus* in five continents are apparently thriving. In many instances these are being reproduced by natural means after cutting.

These silvicultural facts prompt the reader to wonder whether this country has explored sufficiently the obvious possibilities in tree introductions.

The authors used a few words that are uncommon. There is the inevitable printer's error (page 259, fifth paragraph, "millimeters" and "inches" transposed). This reviewer would not characterize ponderosa pine as ". . . hard, strong and resinous . . ." nor typify its use as for ". . . general carpentry and heavy construction."

Some of the extreme site preparation and planting costs mentioned are a little startling (up to 106 man-days per acre in the French Congo) although "man-days" probably assumes a relative value with native labor in the Tropics.

The carefully chosen half-tone, full-page pictures are thoroughly and appropriately illustrative.

If there was ever a reference work from which silviculturists and those charged with the responsibility of forest planting can benefit, it is the reviewer's conviction that this is one.

JAMES D. CURTIS
Intermountain Forest and Range Expt Sta., Forest Service, U. S. Dept. Agric., Ogden, Utah

Current Literature

Compiled by LOIS MCALLISTER, *Assistant Librarian, State University College of Forestry at Syracuse University*
Range Management Section Compiled by NELLIE G. LARSON, *Library, U. S. Department of Agriculture*

General

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How to Spray the Aircraft Way. Rev. By the Pest Control Div., Agricultural Research Serv., 32 pp. Illus. U. S. Department of Agriculture, Washington 25, D. C. 1960. Farmers' Bul. No. 2062. 15 cents (Govt. Print. Off.)

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Silviculture

Geographic Variation in European Larch. By J. B. Genys. 100 pp. Illus. New Hampshire Forestry and Recreation Commission, Concord. 1960. Caroline A. Fox Research and Demonstration Forest Bul. No. 13. 50 cents.

Pin Oak Acorn Production and Regeneration as Affected by Stand Density, Structure and Flooding. By L. S. Minckler and R. E. McDermott. 24 pp. Illus. Missouri Agric. Expt. Sta., Columbia. 1960. Research Bul. No. 750.

Planting Black Walnut for Timber. By A. G. Chapman. 6 pp. Illus. U. S. Department of Agriculture, Washington 25, D. C. 1961. Leaflet No. 487. 5 cents (Govt. Print. Off.)

Response of Young Fir and Spruce to Release from Shrub Competition. By G. L. Baskerville. 14 pp. Illus. Canada Dept. of Forestry, Ottawa, Ontario. 1961. Forest Research Div. Technical Note No. 98.

The Use of Chemicals in Southern Forests; 9th Annual Forestry Symposium. Ed. by R. W. McDermid. 152 pp. Illus. Louisiana State Univ. Press, Baton Rouge. 1961.

Wood Preservation

Dry Kiln Operator's Manual. By E. F. Rasmussen. 197 pp. Illus. U. S. Department of Agriculture, Washington 25, D. C. 1961. Agriculture Handbook No. 188. $1 (Govt. Print. Off.)

Wood Technology and Utilization

Characterization of Sawdust and Shavings for Pulp. By F. A. Simmons and C. H. Hiller. 26 pp. Illus. U. S. Forest Products Lab., Madison 5, Wis. 1961. Report No. 2212.

Mechanism of Veneer Formation at the Cellular Level. By Lawrence Leney. 111 pp. Illus. Missouri Agric. Expt. Sta., Columbia. 1960. Research Bul. No. 744.

Method of Determining Specific Gravity of Wood Chips. By D. M. Smith. 8 pp. Illus. U. S. Forest Products Lab., Madison 5, Wis. 1961. Report No. 2209.

Random-Products Method to Set Stresses for Lumber. By J. W. Johnson. 33 pp. Illus. Oregon Forest Research Center, Corvallis. 1961. Report No. T-21.

Repetitive Loading of Nailed Timber Joints. By J. J. Mack. 8 pp. Illus. Australia Commonwealth Scient. and Indust. Research Org., Melbourne. 1960. Div. of Forest Products Technological Paper No. 10.

Span Tables for Wood Joists and Rafters for Housing. 45 pp. Tables. Canada Dept. of Forestry, Ottawa, Ontario. 1961. Forest Products Research Branch Tech. Note No. 30.

Society Affairs

Officers and Council
1960-1961

CHARLES A. CONNAUGHTON, *President*
U. S. Forest Service
630 Sansome Street
San Francisco 11, Calif.

B. E. ALLEN
Union Bag-Camp Paper Corp.
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Southern Pulpwood Conservation Association
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Yale University
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1410 S.W. Morrison Street
Portland 5, Ore.

HENRY CLEPPER, *Executive Secretary*
Mills Building, 17th Street at Pennsylvanin Avenue, N.W.
Washington 6, D. C.

SVEND O. HEIBERG
College of Forestry
State University of New York
Syracuse 10, N. Y.

RICHARD J. PRESTON, JR.
School of Forestry
North Carolina State College
Raleigh, N. C.

CHARLES L. TEBBE
413 Daly Ave.
Missoula, Mont.

Combined Annual Meeting
Canadian Institute of Forestery and Society of American Foresters
Minneapolis, Minn., October 8-11, 1961

The second combined annual meeting of the Society of American Foresters and the Canadian Institute of Forestry will be held October 8-11, 1961, in Minneapolis, Minn. Headquarters will be the Leamington Hotel. The first joint meeting of the two societies was held in Montreal in 1952.

LOCAL COMMITTEE personnel for the combined CIF-SAF meeting in Minneapolis, October 8-11, 1961. Seated, *L* to *R*, Earl Adams, *Registration and Welcome;* Frank H. Kaufert, *General Chairman;* M. B. Dickerman, *Arrangements;* George Amidon, *Program;* and Mrs. M. B. Dickerman, *Ladies Activities.* Standing, *L* to *R*, Randolph M. Brown, *Meeting and Conference Rooms;* Donald P. Duncan, *Arrangements;* Clarence Eggen, *Hotel Reservations and Housing;* Floyd Ryan, *Information and Publicity;* John R. Neetzel, *Projection and Amplifying Equipment;* William R. Miles, *Exhibits;* James T. Morgan, *Information and Publicity;* and Sidney Weitzman, *Annual Dinner.*

HARRY S. MOSEBROOK

An attendance of 450 members of the CIF and their ladies is expected. From the SAF there are expected 800 members, ladies, and guests.

"Forestry's Common Frontiers" is the theme of this second meeting.

Beginning on Sunday, October 8, there will be meetings of the SAF Council and the CIF Board of Directors, and the annual joint conference of the SAF Section delegates and Council will be held.

Opening General Session

Chairman of the opening general session on Monday morning will be Carl H. Stoltenberg, head of the Department of Forestry at Iowa State University. The President of the Society of American Foresters will open the meeting with a welcome to the members and guests. After his welcome there will be a response by the President of the Canadian Institute of Forestry.

There will then follow two keynote addresses. The first will be given by Harry S. Mosebrook of the Weyerhaeuser Company, New York City. The second will be given by John W. B. Sisam of the University of Toronto Faculty of Forestry.

Business Sessions

On Sunday afternoon, October 8, there will be a joint meeting of the SAF Section delegates and the Council. This will be a closed meeting; admission will be open only to officially designated representatives.

On Monday afternoon, the two societies will hold their customary business sessions.

Following the SAF Society Affairs session, there will be a special program on the subject "Impact of Recreational Demands on Forests." This will be an open session to which guests as well as members of the two societies are welcome.

On Monday evening there will be a technical session on professional education, and a meeting of the Association of Consulting Foresters.

Technical Sessions

Ten technical sessions have been scheduled for Tuesday and Wednesday, October 10 and 11.

SAF members are requested to note that for this occasion the customary meetings of the subject Divisions will not be arranged. The CIF does not have a Divisional organization comparable to that of the SAF, hence in order

J. W. B. SISAM

to provide for full joint participation by the members of both societies, the sessions usually arranged by the Divisions have been designated Technical Sessions on the following subjects:

Economics and Policy
Education
Forest Fire
Forest Management
Forest Products
Forest Recreation
Forest-Wildlife Management
Range Management
Silviculture
Watershed Management

The programs for these sessions have been arranged jointly by SAF Division officers and CIF members specially appointed for that purpose. Please refer to the Schedule of Events for the days on which the technical sessions will be held.

Social Events

No technical sessions or other events have been scheduled for Monday evening, October 9. This evening is being held open for alumni functions.

On Tuesday evening, October 10, there will be a buffet dinner for those wishing to participate. It will be an informal smorgasbord. An evening of forestry motion pictures will also be available in the headquarters hotel.

On Wednesday evening, October 11, there will be a reception and social hour, followed by the joint CIF-SAF annual dinner.

Ladies Activities

Beginning on Sunday afternoon, October 8, and continuing daily during the meeting, a special ladies lounge will be open. Ladies are requested to register here immediately on their arrival. (No registration fee.)

A ladies Program Committee has arranged tours, a luncheon, and other

Schedule of Events

Sunday, October 8

SAF Council meeting: morning.
CIF Board meeting: afternoon and evening.
SAF Section delegates and Council closed meeting: afternoon.
Xi Sigma Pi meeting: afternoon.
JOURNAL OF FORESTRY editorial board conference: evening.
Association of Consulting Foresters open meeting: evening.

Monday, October 9

General session: morning.
CIF business meeting: afternoon.
SAF Society Affairs session: afternoon.
Motion pictures: evening.
Alumni functions: evening.

Tuesday, October 10

Forest Management technical session: morning and afternoon.
Forest Recreation technical session: morning.
Forest-Wildlife Management technical session: morning.
Forestry Education technical session: afternoon.
Watershed Management technical session: afternoon.
Buffet dinner and social evening.

Wednesday, October 11

Silviculture technical session: morning and afternoon.
Forest Products technical session: morning.
Forest Economics and Policy technical session: morning.
Forest Fire technical session: morning and afternoon.
Range Management technical session: afternoon.
SAF Council meeting: afternoon.
Reception and social hour: evening.
Joint CIF-SAF annual dinner: evening.

activities which will be outlined in a special brochure.

Additional information on the ladies events will appear in subsequent issues of the JOURNAL.

Ladies are especially invited to the social evening on Tuesday, October 10, and the reception and dinner on Wednesday, October 11.

The Joint Annual Dinner

The annual dinner of the two societies will be served in the Leamington Hotel on Wednesday evening, October 11.

Preceding the dinner there will be a reception and social hour through the courtesy of Lake States forest industries.

C. W. I. Creighton, deputy minister of the Department of Lands and Forests, Nova Scotia, will be the banquet toastmaster. Two awards for achievement in biological research will be made by SAF President Connaughton. The principal speaker will be announced later. Music and entertainment will follow the dinner.

Hotel Reservations

Those planning to attend the meeting are advised to arrive in Minneapolis on Sunday, October 8. The first general session will start at 9:30 a.m. on Monday, in the Leamington Hotel. All scheduled sessions will be held in this hotel.

There will be no central housing bureau for this meeting. Members should make their own room reservations direct with the hotels of their choice. In case the Leamington cannot accommodate all who request rooms, the overflow will be taken care of at the Curtis Hotel, directly across the street.

To enable the hotels to confirm requests, reservations should be received by them not later than September 15. Early reservations are advisable.

In all cases, reservation requests should state that they are for this particular meeting.

Additional cooperating hotels are listed below with their rates prevailing at the time this issue went to press.

The map of downtown Minneapolis, printed in this issue, will indicate the locations of cooperating hotels, and their distances from the Leamington. All listed below are within walking distance, or at most a short taxi ride, of the Leamington.

Persons wishing additional information about hotels and motels, and their rates, may obtain it from the Convention Department, Minneapolis Chamber of Commerce, 701 Second Avenue South, Minneapolis 2, Minn.

Hotels and Rates

All rates quoted are for rooms with baths. If the rate category requested is not available, rooms in the next highest category will be assigned.

Leamington Hotel (700 rooms), 10th Street at 3rd Avenue South, Minneapolis 4. Single occupancy, $8.50-$16.50. Double-bed rooms, $12.50-$18.50. Twin-bed rooms, $13.50-$21.

Curtis Hotel (800 rooms), 10th Street at 4th Avenue South, and Curtis Motor Lodge, 10th Street at 3rd Avenue South, Minneapolis 4. Single, $6.50-$10. Double, $8.50-$12. Twin, $11-$16.

Francis Drake Hotel (200 rooms), 10th Street and 5th Avenue South, Minneapolis 4. Single, $7-$11. Double, $9-$12.50. Twin, $11-$15.

Hampshire Arms Hotel (186 rooms), 900 - 4th Avenue South, Minneapolis. Single, $5-$6.50. Double, $7.50-$8.50. Twin, $8.50-$10.50.

Mark Twain Hotel (200 rooms), 1030 - 2nd Avenue South, Minneapolis 2. Single, $6.50-$8.50. Double, $8.50-$10.50. Twin, $9.50-$12.50.

Normandy Hotel (100 rooms), 8th Street at 4th Avenue South, Minneapolis 2. Single, $7-$10. Double, $11.50-$13. Twin, $15.-$16.

Pick-Nicollet Hotel (600 rooms), Nicollet and Washington Streets, Minneapolis 1. Single, $9-$13.50. Double, $11.50-$16. Twin, $12.50-$17.50.

Radisson Hotel (500 rooms), 45 South 7th Street, Minneapolis. Single, $8.50-$13. Double, $12-$16.50. Twin, $15-$20.

Sheridan Hotel (430 rooms), Marquette at 11th Street, Minneapolis 3. Single, $6-$6.50. Double, $8-$9.50. Twin, $11-$12.

Committees

The principal planning committees for the meeting have CIF as well as SAF members.

General Chairman is Frank H. Kaufert, School of Forestry, University of Minnesota, St. Paul 1, Minn. The co-chairman is George R. Sonley, Marathon Corporation of Canada, Ltd., P. O. Box 1140, Port Arthur, Ont.

Chairman of the Program Committee is George Amidon, Minnesota & Ontario Paper Company, International Falls, Minn. The co-chairman is A. S. Bray, Ontario Department of Lands and Forests, Port Arthur, Ont.

Chairman, Committee on Arrangements, M. B. Dickerman, Lake States Forest Experiment Station, St. Paul 1,

Minn. Vice-chairman, D. P. Duncan, School of Forestry, University of Minnesota, St. Paul 1, Minn.

Chairman, Committee on Information and Publicity (SAF), James T. Morgan, Lake States Forest Experiment Station, St. Paul 1, Minn.

Chairman, Committee on Hotel Reservations and Housing, Clarence Eggen, Bureau of Indian Affairs, 2908 Colfax Avenue South, Minneapolis 8, Minn.

Chairman, Committee on Meeting and Conference Rooms, R. M. Brown, School of Forestry, University of Minnesota, St. Paul 1, Minn.

Committee on Registration and Welcome, Earl Adams, Minnesota Department of Conservation, Division of Forestry, State Office Building, St. Paul, Minn.

Committee on the Annual Dinner, Sidney Weitzman, Lake States Forest Experiment Station, St. Paul 1, Minn.

Chairman, Committee on Projection and Amplifying Equipment, Marvin Smith, University of Minnesota Extension Service, St. Paul 1, Minn.

Chairman, Committee on Exhibits, W. R. Miles, School of Forestry, University of Minnesota, St. Paul 1, Minn.

Chairman, Committee on Field Trips, Frank Frederickson, Minnesota & Ontario Paper Company, International Falls, Minn.

Chairman, Committee on Ladies Activities, Mrs. M. B. Dickerman, 1538 Grantham Street, St. Paul 8, Minn.

New Journal Services Started

With the authorization of the Council (see page 465, June issue) this issue of the JOURNAL inaugurates two new departments on a trial basis.

We hope that they will meet with your approval, for they result from opinions expressed by the SAF membership as to ways and means by which the JOURNAL might increase its services.

"National Outlook," making its debut on page 536, has been assigned the mission that we think is implied in its name. It will cover major developments in forestry, state without bias policy issues of national significance affecting forestry, and inform readers concerning fields of natural resources conservation closely related to forestry.

The sketch of the fire tower, which will be the trademark of the new section, was drawn for us by Rudolph Wendelin, well known USFS artist.

The new department "Letters" (page 550) is created for the purpose of providing a means by which individual members may express themselves. Letters submitted to the editor for publication must be specifically so identified. They should be directly related to professional matters; they should be constructive, and not libelous or defamatory; and they should be limited to 300 words. No anonymous letters will be published.

THE EDITORS

Coming Events

Allegheny Section

Allegheny Section will hold its summer meeting August 24-26 at Gettysburg, Pa.

Soil Conservation Society

The 16th annual meeting of the Soil Conservation Society of America will be held July 30-August 2 at Purdue University, Lafayette, Ind.

86th Annual AFA Meeting

The American Forestry Association will hold its 86th annual meeting in Santa Fe, N. Mex. October 1-4. Headquarters will be the La Fonda Hotel. Theme of the meeting is "The Stewardship of Our Public Lands." Followng a morning session on October 2, two and a half days will be devoted to field trips covering federal and state lands on the area. An annual banyuet will conclude the meeting on October 4.

Sixth Call for Council Nominations

All members are hereby notified that the regular biennial election will be held December 2, 1961. A president, vice president, and nine other members of the Council will be elected for the two-year term 1962-1963.

The present Council is listed in the box on page 526. Any or all of these incumbents may be renominated, provided they accept the nomination in writing.

Membership on the Council is restricted by the Constitution to Members (formerly Senior Members) and Fellows. Any Member or Fellow is eligible to hold office who is in good standing and who accepts the nomination in writing and declares his willingness to serve if elected.

Each voter will have an opportunity to ballot on all candidates for office. Council members are elected in accordance with the system of proportional representation. The procedure of proportional representation will be explained in a later issue of the JOURNAL. It is the system by which the Society has been electing Council members for more than two decades.

Candidates for the office of president are voted on separately; the candidate who receives the highest vote is declared elected president, and the candidate who receives the next highest vote is declared elected vice president. Thus all candidates for president are considered as nominated also for vice president.

How Nominations Are Made

The Constitution (Article VIII, Section 2) states the conditions under which nominations are made by petition.

1. Each petition shall name but one candidate.

2. All candidates must be eligible to hold elective office.

3. A petition shall bear the signatures of at least ten voting members who at the time of signing the petition are eligible to vote in the coming election. (Eligible voting members are Junior Members, Members, and Fellows in good standing.)

4. A voting member may not sign more than one nominating petition for president or more than one nominating petition for a member of the Council. That is, he may sign two, but no more.

5. Petitions must be in the Society office by September 16, 1961.

The Society has no special form for submitting nominating petitions. They may be written as follows:

We, the undersigned voting members of the Society of American Foresters, hereby nominate John Doe, a Member (or Fellow) for the office of president (or member of the Council) for the two-year term 1962-1963.

The form of acceptance of a nomination may read as follows:

I accept the nomination to the office of President (or to membership on the Council) of the Society of American Foresters for the two-year term 1962-1963, and agree to serve if elected.

No nomination will be considered valid unless supported by the nominee's acceptance in writing which should be attached to the nominating petition.

All nominating petitions should be sent promptly to the Society office, 425 Mills Building, 17th Street at Pennsylvania Avenue, N. W., Washington 6, D. C. The executive secretary will gladly provide information about nominating or election procedure.

According to the Constitution (Article VIII, Section 1) a Nominating Committee has been appointed by President Connaughton.

This committee is charged with the following duties:

1. To set the date of the election. (December 2, 1961, is the date.)

2. To provide for at least two candidates for the office of president, and at least nine candidates for membership on the Council.

3. To receive separate nominating petitions for the office of president and for each member of the Council, and to supplement such petitions when necessary with other nominations in order to comply with item 2 above.

The Nominating Committee will make no nominations of its own unless the voting membership fails to make the required minimum number of nominations by petition. Voting members should accordingly get busy and make their own nominations. For their information the distribution of Council members by states during the period 1946-1961 is shown in Table 1, page 143, February issue.

Nominations Received

On the date of going to press the following nominations had been received:

For President

B. E. Allen, Savannah, Ga. (Council Member 1956-1957, 1958-1959, 1960-1961.)

Paul M. Dunn, New York, N. Y. (Council Member 1946-1947, 1948-1949.)

J. Herbert Stone, Portland, Ore. (Council Member 1954-1955, 1956-1957, 1958-1959.)

For the Council

William C. Bramble, Lafayette, Ind. (Council Member 1960-1961.)

Gene L. Butcher, Frankfort, Ky.

Donald E. Clark, Denver, Colo. (Council Member 1958-1959, 1960-1961.)

Robert H. Clark, Fordyce, Ark.

George W. Dean, Charlottesville, Va.

F. T. Frederickson, International Falls, Minn.

W. D. Hagenstein, Portland, Ore. (Council Member 1958-1959, 1960-1961.)

Svend O. Heiberg, Syracuse, N. Y. (Council Member 1960-1961.)

George M. Jemison, Washington, D. C.

Dahl J. Kirkpatrick, Albuquerque, N. Mex.

Charles H. Lewis, Jr., Alexandria, La.

Walter H. Lund, Portland, Ore.

William A. Parr, Bel Air, Md.

Archie E. Patterson, Athens, Ga.

Burnett H. Payne, San Francisco, Calif.

Richard J. Preston, Jr., Raleigh, N.C. (Council Member 1960-1961.)

John F. Shanklin, Washington, D C.

J. K. Vessey, Atlanta, Ga.

Eugene V. Zumwalt, Washington, D. C.

SETH G. HOBART, *Chairman*
Nominating Committee

Sixth Call for Fellow Nominations

All members (formerly Senior Members) and Fellows of the Society are hereby advised that nominations for the grade of Fellow are now open. The election of Fellows will be held at the time of the Society's regular biennial election, December 2, 1961.

As defined by the Constitution (Article III, Section 7), "Fellows shall be foresters recognized generally throughout the profession as persons who have rendered outstanding service to forestry and to the Society. They shall be elected from the Members."

Nominations by Petition

The procedure for placing Members in nomination for the grade of Fellow is by petition. The Society has no printed form for this purpose; the petition may be typewritten thus:

We, the undersigned Members and Fellows of the Society of American Foresters hereby nominate John Doe for election to the grade of Fellow in 1961.

Remember these simple rules:

1. A petition may not name more than one nominee.

2. It must be signed by not less than 25 Members or Fellows in good standing.

3. It must be accompanied by a factual, not eulogistic, biographical sketch of at least 300 words giving an account of the nominee's professional career and accomplishments.

4. It must be received in the executive office of the Society, 425 Mills Building, 17th Street at Pennsylvania Avenue, N.W., Washington 6, D. C., not later than September 16, 1961.

The executive employees of the Society cannot be responsible for obtaining signatures on partially completed petitions or on petitions incomplete by reason of unacceptable signatures (that is, signatures of other than Members and Fellows in good standing). Only those nominees' names will appear on the ballot whose petitions are complete and valid in all details as of September 16, the closing date.

Election Procedure

Fellows are not elected by the membership at large, but by a board of electors which consists of all present Fellows, the Council, the chairmen of the 22 Sections, and the chairmen of the 10 subject Divisions.

The system is described in Article IV, Section 4 of the Constitution. To win election a nominee must receive an affirmative vote of not less than one-half the total number of votes cast, as provided in Bylaw 11.

For the 1961 election there will be 135 electors, of whom 94 are Fellows. An elector has one vote only. Thus, a Fellow who is also a Council member has but one vote.

Significance of the Grade

The highest membership distinction that can be conferred by the Society, this grade is awarded in recognition of outstanding service to forestry and to the Society. Fellows do not pay increased dues; their dues are the same as those of Members.

Since the Society was founded in 1900, there have been 125 Fellows elected. At the present time the number of living Fellows is 94.

The current roster of Fellows appeared in the May issue, page 386.

Nominations Received

On the date of going to press the following nominations for Fellow had been received:

Frank A. Albert, Jacksonville, Fla.

Robert S. Campbell, New Orleans, La.

Nathan D. Canterbury, Houston, Texas.

S. A. Graham, Ann Arbor, Mich.

Lewis R. Grosenbaugh, Berkelely, Calif.

Walter H. Horning, Washington, D. C.

George M. Jemison, Washington, D. C.

Fred H. Lang, Little Rock, Ark.

Henry J. Malsberger, Atlanta, Ga.

Ira J. Mason, Bethesda, Md.

William M. Oettmeier, Fargo, Ga.

George R. Phillips, Chevy Chase, Md.

John A. Putnam, Leland, Miss.

A. B. Recknagel, Ithaca, N. Y.

John F. Shanklin, Washington, D. C.

Allen E. Thompson, Seattle, Wash.

Arthur T. Upson, Tucson, Ariz.

George O. White, Jefferson City, Mo.

Council's Column

Stand Up and Be Counted!

Recent Council's Columns have pointed out the need for action by the Society on matters of national forest policy. The present writer agrees with this viewpoint and intends here to pursue this important aspect of our Society further. More specifically, this article aims to describe some of our capabilities and to suggest means for some current activities.

It is essential that when a professional society is asked to stand up and be counted on national policy, its members should soberly reflect on the proposition and ask some pointed questions. One important sequence that comes to mind, for example, is: *"Who* should stand up? For *what?* And before *whom?"* As simple as these appear at first glance, they are actually dynamite for while we may appear to be a closely knit society of coherent members, we actually contain some very diverse groups.

First, consider the question, "Who should stand up?" A quick answer to which might well be, "the Executive Secretary." And while this is a legitimate answer, we must understand there is a limit to this activity of the secretary, set not only by time and distance but also by the fact that we are not a lobbying organization with an executive paid primarily to promote legislative interests. Certainly, our executive secretary should bring policies of the Society before proper persons or groups and actively represent the Society, which he certainly does. However, there is another approach that would permit more rapid and locally available representation, namely, through Section officers, or other responsible members delegated by a Section to appear as professional foresters before state and federal legislative committees. When this is done, it is doubly important that anyone so acting be fully informed as to the policy approved by Society membership.

This leads to the next question, "Stand up for what?" Policies of the Society of American Foresters are set by referendum ballots of all voting members. The Council of the Society, as an executive group, does from time to time take certain actions which resemble policy decisions; however, to be legally correct, these must be made within the framework of referendum ballots of the total Society membership. All of the policies and ballots of the Society have been published in the JOURNAL OF FORESTRY at the time they were current. Unfortunately, most of them have been lost in the files of practicing foresters, so that essential steps are now being taken by the Council to organize and modernize policy statements of the Society which will then be put in the hands of all members. When this is done, the "what" should be clear although it will still be vitally important that the membership be reminded and kept fully informed on these from year to year. That it is essential to keep policy statements of the Society up-to-date is witnessed by the way in which action on given questions has changed from time to time as the membership has changed and as the national scene has altered. Such changes in policy are wise because a professional society must not only take a definite stand on important national forestry affairs but it must also be willing to change its stand as new facts are discovered and new evidence is presented. I am reminded of a cartoon showing the irate boss behind an executive-type desk saying to a trembling clerk, "There is *no* reason for it, I tell you, it is just our policy." That the Society changed its policy stands is a matter of record. For example, in 1920 the vote (166 members) was in favor of legislation to prevent forest devastation and approved legislative control over private forest lands. Later in the same year, in a close vote, state control was favored over federal. When the question of regulation came up again in 1950, the Society (3,652 members) voted 7 to 3 against federal regulation.

The third question proposed above is "Stand up before whom?" and this will be the most vital question of all, for many Sections are not well informed on before whom to appear. The most obvious place in the current scene is before one of the numerous Senate select committees that tour the country holding hearings on legislation that affects forestry and conservation. Such committees on water resources, marketing of forest products, price reporting, and wilderness all have had their one-day stands in various sections. Some of these have been rather poorly attended by foresters representing the Society while a few have been met squarely. An example of the latter was in recent testimony by the Puget Sound Section on wilderness, effectively done by the Section chairman. While backing of a policy statement from the entire Society may have been even more effective, the point is that a local forester stood up with Section support before a powerful committee and was counted. We need more of this if our Society is to wield the influence it should upon forest policy. If we don't stand up and be counted, a vociferous minority will.

Other groups before whom the Society could be represented are the various state legislative committees on natural resources. Questions such as a merit system for professional foresters and land reclamation measures have appeared on local scenes where foresters were logical witnesses. As our government is controlled by committee action, these are ideal focal points for influencing policy by appearing to give expert testimony on a nonpolitical basis.

WILLIAM C. BRAMBLE

Gulf States Section Holds Lively Annual Meeting

With 250 members and 70 ladies in attendance, the annual meeting of the Gulf States Section was held at the Edgewater Gulf Hotel, Edgewater Park, Miss., May 8 and 9.

Chairman Richard C. Allen presided at the morning business meeting. A report on membership was given by Vice Chairman Marion A. Stephens, Jr. Secretary Sidney McKnight reported on Section business and finances. Henry Clepper, SAF executive secretary, discussed Society affairs.

The North Mississippi Group of the Mississippi Chapter was recognized as the outstanding group in the Section during the past year.

An afternoon visit was made to the new Southern Institute of Forest Genetics at Gulfport, and then to the Forest Service's genetics field headquarters and laboratories at Saucier. The day's activities closed with an outdoor barbecue in the DeSoto National Forest.

The theme of the second day's technical session was "A Look Ahead in Forestry." A. M. Herrick of the University of Georgia School of Forestry gave the keynote address. This was

RECIPIENTS of awards by the Gulf States Section are congratulated by Henry Clepper, SAF executive secretary. *L* to *R*: John W. Squires of Jackson, Miss.; Clepper; James E. Mixon of Baton Rouge, La.; and T. H. Silker of Kirbyville, Texas.

followed by a panel discussion with participants as follows:

Robert T. Clapp of Mississippi State University discussed the future of forest management; L. S. Newcomb of the U. S. Forest Service discussed public land administration; Wilbur H. Henderson of Crown Zellerbach Corp. discussed industrial land administration; John Guthrie, consulting forester, discussed small forest ownerships; A. D. Folweiler of the Texas State Forest Service discussed state forestry activities.

These presentations were followed by talks on wood utilization by William C. Hopkins of Louisiana State University; on the southern pine lumber business by John Batson of the Allison Lumber Company; on the wood preserving industry by W. T. Hawkins of Koppers Company, Inc.; on the pulpwood business by T. W. Busch of International Paper Company; and on the hardwood lumber industry by W. H. Guyer of Anderson Tully Lumber Company.

The technical session closed with a talk on "New Tools of Forestry" by James W. Craig of Forestry Suppliers, Inc.

Following a social hour on the hotel lawn, dinner was served in the Marine Room with J. N. Kutack as toastmaster. Charles H. Lewis, Jr., in behalf of the Section, presented awards to James E. Mixon of the Louisiana Forestry Commission; T. H. Silker of the Texas Forest Service; and John W. Squires of Jackson, Miss.

New officers were elected as follows:

For the period July 1, 1961, to June 30, 1962: Chairman, E. A. Golden; Vice Chairman, J. B. Webster; and Secretary-Treasurer, Nelson T. Samson; all of Texas.

For the period July 1, 1962, to June 30, 1963: Chairman, William F. Mann; Vice Chairman, Joe D. Burns; and Secretary-Treasurer, Ralph T. Wall; all of Louisiana.

Kentucky-Tennessee Section Summer Meeting 1961

On May 5 and 6 the annual summer meeting of the Kentucky-Tennessee Section of the SAF was held at Crossville, Tenn. Over 110 members, guests, and their families enjoyed the beautiful surroundings and facilities of the Harrison Lake Resort.

The highlight of the program was the Friday morning tour of the Catoosa Wildlife Management Area, an 85,000-acre area owned and operated by the Tennessee Game and Fish Commission. With the theme of the meeting "Multiple Use of Forests," the Catoosa Area demonstrated the multiple-use concept with particular emphasis on the wildlife management aspects. Points of interest included game check stations, commercial sale areas, recreational and fish management areas, and trapping and tagging operations of deer and turkey. All enjoyed the luncheon stop with barbecue beef served on the Catoosa Area.

A panel discussion on the aspects of multiple-use management completed the afternoon program. Leonard Foote, field representative, Wildlife Management Institute, Atlanta, Ga., served as panel moderator. Other panel members were John Witherspoon, Southern Pulpwood Conservation Association; Raymond Moody, wildlife manager, International Paper Co.; Gilbert Stradt, forest supervisor, Cherokee National Forest; Carl Peterson, state forester, Tennessee; and Forrest Durand, director, Tennessee State Game and Fish Commission. The panel session was closed with a lively and enlightened discussion period.

The Section held a short business meeting Saturday morning, May 6, with Chairman Warmbrod presiding. Most committees presented brief reports. Harry Murphy presented a resolution for the Council and Fellow Committee concerning the nomination and election of Fellows. A resolution was adopted by the Section that concurred with the report of the Southeastern Section on proposed changes in election procedure for Fellows and for the Council. Members voted to send Chairman Warmbrod as official delegate to the annual SAF meeting in Minneapolis, Minn., next October 8-11. The winter meeting will be held in Kentucky with Cumberland Falls or Mammoth Cave the most likely choice.

MARTIN DALE
Acting Secretary-Treasurer

Intermountain Section Meets

The theme of the 11th annual meeting of the Intermountain Section held April 22, 1961, at Ogden, Utah, was "The Level of Forest Management Required to Meet National Wood Needs." The conference was attended by approximately 75 members.

Advancing the theme in more detail were interesting discussions on topics presented by S. Blair Hutchison, economist of the Intermountain Forest and Range Experiment Station, on "National Timber Requirements and the Need for More Intensive Forest Management"; Joel Frykman, Division of Timber Management, Region 4, and George Weyermann, Division of Timber Management, Region 1, on "Regional Timber Production Goals and What They Mean to Timber Management." John H. Wikstrom, economist of the Intermountain Forest and Range Experiment Station, was chairman of a panel composed of Roger Guernsey, Idaho state forester; Ray Moore, Utah State University; Art Roe, U. S. Forest Service; and Elbert Cleaveland, Boise Cascade Corporation, on a discussion of "The Road Blocks to Better Forest Management."

The meeting was concluded by a social hour and banquet held in the Hotel Ben Lomond. The dinner program was provided by children from the Utah School for the Blind and members of the Utah Society for the Blind.

JOHN DEINEMA
Publicity Chairman

Alaska Section Officers Elected

The Alaska Section has announced the results of its recent election of officers as follows:

Chairman—John Sandor, Box 1631, Juneau.

Vice Chairman—F. E. Loud, 1450 Tongass Ave., Ketchikan.

Secretary-Treasurer — Carl Wilson, Route 1, Box 183, Ketchikan.

The Section has three Chapters: Ketchikan Area; Juneau Area; and Interior.

Columbia River Section Officers

Officers of the Columbia River Section for the term July 1, 1961, to June 30, 1963, have recently been elected as follows:

Chairman—Arthur V. Smyth, Weyerhaeuser Company, North Bend, Ore.

Vice Chairman—Donald B. Malmberg, Crown Zellerbach Corporation, Seaside, Ore.

Appointments to the offices of secretary-treasurer and membership chairman for the 1961-1963 term will be made by Chairman Smyth.

Southwestern Section Holds Annual Spring Meeting

With 60 members, their ladies, and guests in attendance, the Southwestern Section held its spring meeting in Cloudcroft, N. Mex., April 28 and 29.

At the business meeting, conducted by Chairman C. A. Merker, reports on membership and finances were given by T. J. Loring, vice chairman. Henry Clepper, SAF executive secretary, discussed Society affairs.

A session on forestry and wildlife relationships followed; Irvin Pat Murray was moderator. Robert Stewart of the New Mexico Department of Game and Fish presented an account on deer studies on the Lincoln National Forest. Samuel Lamb, assistant director of the Department, discussed Departmental-Forest Service cooperative projects.

Wallace B. Gallaher of the U. S. Forest Service, Albuquerque, discussed the multiple-use aspects of game management; followed by the New Mexico Game Department motion picture "Wildlife World."

At the Section's dinner, Mr. Murray served as toastmaster. The address of the evening was given by William L. Reavley, western field representative of the National Wildlife Federation.

A field trip on the morning of April 29 was taken to the Penasco small watershed project; Lincoln National Forest supervisor Ferris E. McDermaid, and Rolfe C. Hoyer, district ranger, served as discussion leaders. Included in the trip were visits to game management and reforestation work on old burns.

The next meeting of the Section will be held in Taos, N. Mex., September 29 and 30.

John D. Earle (1914-1961)

John D. Earle, who had been responsible for timber management for the Timberlands Division of West Virginia Pulp and Paper Company, was fatally injured in a plane crash while returning from a fire observation flight over the company's North Carolina woodlands on April 26.

The crash occurred shortly after the plane took off from the company air strip in Tyrrell County to return to Manteo, N. C., after patrolling a woods fire.

Mr. Earle, who was 47, was a native of Clarksburg, W. Va. He attended Antioch College and was graduated from the University of West Virginia

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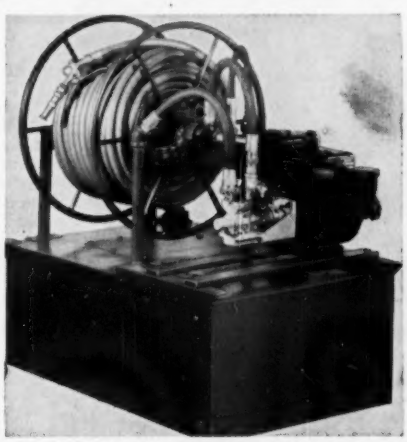

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with a B.S. degree in forestry in 1940.

He joined West Virginia in 1945 after service with the Army and worked in the company's southern woodlands at Summerville, S. C. In 1952 he was promoted to assistant to the manager of the North Carolina woodlands and assumed responsibility for technical aspects of the division's timber management program in 1959.

Mr. Earle was a member of the Society of American Foresters.

Membership Applications and Advancements

Proposals for admission, advancement, and reinstatement received in the Society office during the month of May are listed below.

Action on the eligibility of those proposed for membership as listed below will be taken by the Council as of July 31, 1961.

Communications from the voting members regarding the membership eligibility of these persons should be received in the Society office prior to that date.

Allegheny Section

Student Grade

PENNSYLVANIA STATE UNIVERSITY

Schweitzer, D. L. Wintersteen, R. J.

Junior Grade

Fogus, D. L., Area Extension Forester, Forestry Building, Elkins, W. Va. W. Va. Univ., BSF, 1960.

Parsons, J. H., Asst. District Forester, Div. of Forestry, Conservation Commission of W. Va. Milton, W. Va. (Reinstatement).

Appalachian Section

Student Grade

NORTH CAROLINA STATE COLLEGE

Moore, A. Ross

Columbia River Section

Student Grade

OREGON STATE COLLEGE

Black, R. S.	Klemme, C.
Christenson, D. G.	Mallery, M. D.
Crawford, R. W.	Payne, D. A.
Eveleth, N. J.	Pearce, H. L.
Ferguson, E. L.	Sykes, R., Jr.
Goodman, L. E.	Tobin, J. J., Jr.

Junior Grade

Adams, P. L., Forester, Bear Springs Ranger Station, Maupin, Ore. Pa. State BSF, 1950.

Mitchell, H. W., Forester, North Pacific Highway, Medford, Ore. (Reinstatement).

Rice, E. D., Logging Engineer, United States Plywood Corp., Mapletown, Ore. Ore. State College, BSF, 1952.

Zimmerman, N. L., Forest Engineer, Crown Zellerbach Corp., Vernonia, Ore. (Reinstatement).

Member Grade

Greth, J. W., Forest Project Leader, Okanogan National Forest, Okanogan, Wash. Pa. State, BSF, 1954 (Junior 1954).

Affiliate Grade

Harris, E. C., Forestry Aid, Mt. Hood National Forest, Maupin, Ore.

Gulf States Section

Junior Grade

Craft, M. D., Forester, Powell Lbr. Co., Lake Charles, La. (Af56).

Member Grade

Biskamp, L. A., Chief, Records Division, Orange, Texas, Stephen F. Austin State College, BSF, 1950 (Af55J57).

Inland Empire Section

Student Grade

UNIVERSITY OF IDAHO

Huff, W. M. Schmidt, R. S.

Intermountain Section

Junior Grade

Farrenkopf, T. O., Forester, Div. of Forest Economics, Intermountain Forest & Rrange Expt. Sta., Ogden, Utah (Reinstatement).

Miller, R. A., District Forester, Idaho State Forestry Dept., Boise, Idaho (Reinstatement).

Preston, P. C., Asst. District Forester, Idaho State Forestry Dept., McCall, Idaho (Reinstatement).

Kentucky-Tennessee Section

Member Grade

Cain, R. H., 413 College St., Athens, Tenn. (Junior 1954).

New England Section

Student Grade

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Member Grade

Borg, R. M., Manager, Borg & Co., West Suffield, Conn. (Af35J43).

New York Section

Affiliate Grade

Frament, A. W., 312 Semple St., Troy, N. Y.

Northern California Section

Junior Grade

Appel, T. A., Forester, Diamond National Corp., Paynes Creek, Calif. Ore. State College, BSF, 1959.

Blatner, F. J., Forester, USFS, Gasquet, Calif. (Reinstatement).

Clabaugh, R. W., Forester, USFS, Redding, Calif. (Reinstatement).

Member Grade

Goudy, A. C., Forester, Collins Pine Co., Chester, Calif., Yale UNIV., MF, 1956 (Junior 1956).

Northern Rocky Mountain Section

Student Grade

MONTANA STATE UNIVERSITY

Coffman, R. C. Lundeen, L. J.
Kovalicky, T. J. Richmond, T. C.

Junior Grade

Dean, N. E., Asst. County Agent, Prairie County, Terry, Mont. Montana State Univ., MS, 1960.

Smith, E. H., Cooperative Extension Wildlife Specialist, Mont. State College, Bozeman, Mont. Utah State Univ., BS, 1940, MS, 1948.

Williams, D. V., Forester, USFS, Gallatin N. F., Bozeman, Mont. (Reinstatement).

Affiliate Grade

Stallings, B. D., Forester, Ant Flat Ranger Sta., Fortine, Mont.

Puget Sound Section

Student Grade

UNIVERSITY OF WASHINGTON

Hesseltine, R. C.

Junior Grade

Hill, J. L., Asst. Supervisor, Dept. of Natural Resources, Olympia, Wash. (Reinstatement).

Member Grade

Boles, M. E., 492 New York Ave., Chehalis, Washington. (Junior 1954).

Donaldson, P. O., 3007 West Viewmont Way, Seattle 99, Wash. (49R57).

Harding, R. A., Asst. Supervisor, Olympia, Wash. Univ. of Wash., BSF, 1956 (Junior 1956).

Johnson, L. C., Box 750, Chehalis, Wash. (Junior 1954).

LeMay, W. V., 713 Regents Blvd., Tacoma 66, Wash. (Junior 1954).

Lloyd, C. C., Timber Tax Agent, Seattle, Wash. Univ. of Wash., BS, 1956 (Junior 1956).

Morton, L. V., Asst. Supervisor, Dept. of Natural Resources, Olympia, Wash. Univ. of Wash., BS, 1949 (AF 51J56).

Radnich, J. C., Box 555, Deming, Wash. (Junior 1954).

Truax, W. F., 3406 Elwood Dr., Tacoma 66, Wash. (Junior 1954).

Wooldridge, D. D., 1037 Columbine St., Wenatchee, Wash. (Junior 1954).

Affiliate Grade

Bednarik, A., Forester, USFS, Quinault, Wash.

Southeastern Section

Student Grade

UNIVERSITY OF GEORGIA

Chesser, A. H.

Southwestern Section

Member Grade

Smith, Z. G., Asst. Regional Forester, Albuquerque, N. Mex. Colo. State Univ., BSF, 1951 (Reinstatement).

Upper Mississippi Valley Section

Student Grade

IOWA STATE UNIVERSITY

Hanson, D. C.

UNIVERSITY OF MINNESOTA

Beardsley, W. G. Hagen, A. E.

Junior Grade

Stark, E. G., Sales Representative, International Paper Co., Bettendorf, Iowa. Mont. State Univ., BSF, 1958.

Wisconsin-Michigan Section

Student Grade

MICHIGAN COLLEGE OF MINING & TECHNOLOGY

Nilsen, C.

MICHIGAN STATE UNIVERSITY

Bernhard, R. G. Burns, J. A.

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National Outlook

Climate for Conservation. The Kentucky administration is showing a lively interest in the conservation and development of natural resourses. The President has given emphasis to resource development in a special message to Congress on natural resources, in recommendations for forestry and related work in his special farm message to Congress, and in several other pronouncements. In his amendments to the Eisenhower budget for fiscal year 1962, President Kennedy recommended increases in numerous resource protection and development items.

Career employees in federal resource agencies generally feel that they are working in an atmosphere of friendliness and understanding. In the Department of Agriculture, the Forest Service so far has not been subjected to political pressures. Job turnovers in other Agriculture agencies have been limited largely to those agencies having politically-appointed administrators. Secretary Freeman and members of his staff are showing themselves sympathetic and knowledgeable on natural resource matters.

The tone has perhaps been a bit more political, and some turnover in top personnel has occurred, in the Department of the Interior with the change of administration. Interior employees in natural resource agencies, however, are heartened by an apparent fresh new look and the promise of vigorous action on conservation matters. Secretary Udall recently told a meeting of the National Advisory Board Council for Grazing that the public lands in grazing districts no longer have value only for livestock and wildlife grazing. "In many areas of the West," he declared, "and the number will surely grow in the future —other multiple-uses are growing in importance. Modern day public land management programs must take full account of these values."

Hunting in the Parks? The roar of verbal barrages on the question of public shooting in the national parks may be louder than would be the sound of the hunting rifles if such public shooting is permitted. At this year's North American Wildlife and Natural Resources Conference in Washington, D. C., Director Conrad L. Wirth of the National Park Service mentioned that regulated hunting by the public was being considered as a measure for control of wildlife population in the parks. Earlier, a Park Service biologist had suggested to the Nevada Fish and Game Commissioners that the proposed Great Basin National Park be established under provisions of law that would permit the opening of parts of the park to deer hunting by the public. The public hunting would be conducted under regulations promulgated by the Secretary of the Interior after consultation with the Nevada Fish and Game Department.

The proposals have already provoked much discussion. Resolutions pro or con may be expected from a number of conservation organizations. The board of trustees of the National Parks Association, a citizens' organization that supports and defends the national parks, has already adopted a policy statement declaring the Association's opposition to the opening of any primeval national park to public hunting.

Director Wirth emphasized that no program of shooting is being considered except for reduction of surplus destructive animal populations. He declared that recreational hunting would be completely at variance with national park purposes. The Park Service does have authority, however, to destroy animals or plant life detrimental to the use of the parks. Overpopulations of elk and deer have been causing damage in a number of the parks, and for several years limited control work has been carried on by Park Service personnel. In one national park, the Grand Teton, public hunting has been authorized by act of Congress. In eight years of hunting to relieve the pressure of elk herds on the range, the annual kill has averaged 166 animals. Another elk hunting season under permit has been scheduled in this park for 1961.

Small Woodlands Program. Very soon—probably within the next month or two—a program for lands in small forest ownerships will be presented to Congress by the Department of Agriculture. The program has been in preparation in the Department's Forest Service for more than two years, and lately has been under review by the various federal and state agencies affected. Its preparation followed a series of 24 regional meetings with community leaders and woodland owners, sponsored by the Forest Service and state foresters in 1958. At these meetings problems were discussed and suggestions sought as to how the 265 million acres of forest land in farm and other nonindustrial ownerships—more than half the country's commercial forest land—can be put under better management so that they can meet their share of the nation's timber needs.

The forthcoming program was given more or less of a preview at the last annual meeting of the Association of Consulting Foresters in Washington, D. C. Leonard I. Barrett, recently retired from the Forest Service's Division of Program Planning and Special Projects, presented what he termed outlines for a program for small forest ownerships. Mr. Barrett emphasized that this presentation should not be construed as the Forest Service's final program, and the Forest Service itself hastened to announce that Mr. Barrett's outline was not the official program of the Department. Since Mr. Barrett before his retirement was one of the Forest Service technicians assigned to develop the program, however, it is likely that the Forest Service program when finally completed and approved will contain many of the recommendations in Mr. Barrett's outline.

Among these recommendations were: Federal cost-sharing of approved forest practices along the lines of the present agricultural conservation program; expansion of the cooperative forest management program of technical aid to woodland owners; intensification of extension services and vocational education in forestry; local forestry committees to coordinate public and private efforts; intensification of protection against fire and pests; state acquisition and rehabilitation of severely depleted forest lands, and later return of these lands to private ownership with covenants requiring adherence to approved

management plans; stepped-up production of planting stock; and more research and pilot projects in small woodlands management. These activities would be federal-state cooperative projects. For most of them, the federal government would bear the major part of the cost during the initial stages.

Soil Bank Tree Planting Out. Some 2,200,000 acres of farm land were signed up for tree planting under the Conservation Reserve Program ("Soil Bank") authorized by the Agricultural Act of 1956. This act included provisions for federal financial assistance to farmers for converting general cropland to conservation uses, including the planting of trees. After 1960, neither the Eisenhower nor the Kennedy administration requested funds for continuation of the program. The last Soil Bank contracts with landowners were signed in February 1960. These contracts were for 10 years; in some cases they could go to 15 years. The contracts already signed up will be carried out; Congress made available $330,000 in 1961 to carry on the Conservation Reserve Program, and the same amount was included in the budget for fiscal year 1962.

In addition to the land signed up for tree-growing under the program, 308,000 acres were signed up for wildlife developments, including construction of farm ponds, restoration of former marshlands, and planting of wildlife cover.

Title IV Planting In. As the Soil Bank program went out, a new program of federal assistance to the states in tree planting was on the way in. The budget requested, and the 1962 appropriation bill carries $1,000,000 for assistance to the states in tree planting under Title IV of the Agricultural Act of 1956. These funds, according to the report on the bill by the House Appropriations Committee, will be used "to provide advice, technical assistance, and financial contribution, to carry out increased tree planting and reforestation work on non-federal forest land," and will "help offset the anticipated decrease in planting under the Conservation Reserve in 1962." The funds must be matched by the states.

The new Title IV program is more comprehensive than the long-time federal-state cooperative program of tree production and distribution conducted under Section 4 of the Clarke-McNary Act of 1924. The "CM-4" program provided only for the production and distribution of trees. The states sell them to farmers at moderate cost. The new program can be extended to any nonfederal lands, and provides not only for the production of planting stock but also for on-the-ground technical assistance and financial aid to landowners. Along with the new Title IV work, the old CM-4 program will be continued; the 1962 budget carries $296,000 for this purpose—the same amount that was appropriated for fiscal year 1961. Federal cooperation with state forestry agencies under both programs will be administered by the Department of Agriculture's Forest Service.

Fire Control Study. In reporting the appropriation bill for the Interior Department and related agencies (which, according to the Committee's way of doing things, includes funds for the Agriculture Department's Forest Service), the House Committee on Appropriations requested that the Forest Service, in collaboration with the Bureau of Land Management, Bureau of Indian Affairs, the National Park Service, undertake a study of current organization and methods for forest fire control. The Committee asked especially whether a larger fire-fighting air force of government-owned planes would be more effective than the present use of private eequipment under contract. The Committee's request was prompted by concern over the high cost of forest fires on public lands. Federal fire-fighting costs exceeded $42,000,000 in fiscal year 1961.

Recreation on the Public Domain. Included in the budget estimates for fiscal 1962 for the Bureau of Land Management was a request for funds to develop recreational facilities on the public domain. The request was turned down, however, by the House Appropriations Committee. The Committee suggested that BLM look first to the possibility of leasing or selling tracts of land to states or local jurisdictions for public recreation purposes.

Minimum Wage Inccreased. Many industry operators will be affected by the Wage-Hour bill which was enacted by Congress and signed by the President in May. The minimum hourly wage will increase to $1.15 on September 5, and to $1.25 two years later. Adequate time and wage records will be important, to be prepared for probable inspection by Department of Labor representatives.

Wood Use Survey. The Forest Service has mailed reporting forms to 45,000 establishments to collect information on the quantity, and kinds of lumber, bolts, veneer and plywood, hardboard, and particle board used in manufacturing industries last year. This will be the Forest Service's first study of wood used in industry since 1948. The results are to be published next year.

The Chamber of Commerce of the United States adopted revised policy declarations on water resources at its 1961 annual meeting in Washington, D. C. The policies approved called for legislation to establish a "consistent and progressive water and land policy for the United States" which would encourage maximum participation by industry and state and local governments. The "threat of government monopoly of water resources" was viewed with alarm. Opposition was expressed to extension of valley authorities to other areas of the country. The Chamber declared that "future plans for water conservation should lay adequate emphasis upon small upstream watershed project development, and upon forestry and farming practices and other land surface operations" to improve stream-flow and reduce floods.

Pay Raise? The chief of the Forest Service, administrator of Soil Conservation Service, and twenty-five other federal executives would be placed in Grade 18 of the Classification Act, with $18,500 salaries, under an Administration-backed bill introduced in Congress by Senator Olin D. Johnston of South Carolina, chairman of the Senate Post Office and Civil Service Committee. Their salaries, now fixed by the Executive Pay Act, range from $16,000 to $17,500.

"America's Playgrounds." Recreation gets increasing attention in the expanding multiple-use program of the national forests. In mid-June Secretary of Agriculture Freeman issued a special invitation and message of welcome to the public to use the national forests' recreation facilities. The invitation was coupled with appeals to help keep the recreation areas clean and protect the forests from fire and vandalism. New posters appearing this month back up the Secretary's welcome to the national forests, which the Department is now calling "America's playgrounds." The Forest Service is expecting more than 100,000,000 recreation visits this year, continuing the substantial increases in recreation count that have occurred each year since World War II. The revised budget for the new fiscal year included a boost of more than $3,000,000 for national-forest recreation. A further large increase may be expected in the budget requests for next year.

Forestry News

J. Whitney Floyd Appointed Dean

Daryl Chase, president of the Utah State University, Logan, has announced the appointment of J. Whitney Floyd as the new dean of the College of Forest, Range, and Wildlife Management. He has been serving as acting dean since the death of Dean Lewis Turner.

Dean Floyd has been with the staff of the College since he became an instructor in 1935. From this position he moved through the academic grades to professor and head of the Department of Forest Management. A Utah alumnus, he received graduate training at the Universities of California and Michigan. He has served as fire warden and state forester for many years, functioning also as extension forester.

Dean Floyd helped to establish a forest ranger school in Iran under the auspices of a U. S. foreign aid program.

J. Whitney Floyd

Rocky Mountain Regional Forester Retires; Successor Named

Donald E. Clark, regional forester for the Rocky Mountain Region of the U. S. Forest Service with headquarters in Denver, has applied for retirement after more than ten years in this position. He will be succeeded by David S. Nordwall, director of the Forest Service Internal Audit Staff in Washington, D. C. Changes are effective July 1.

Mr. Clark has served as regional forester during a decade of spectacular growth in the Rocky Mountain Region. A staunch advocate of multiple-use management, he developed plans for full and sustained yield use of the national forests many years before this policy was written into the law.

A veteran of 37 years with the Forest Service, his first assignment was as junior forester in charge of timber surveys on the Medicine Bow

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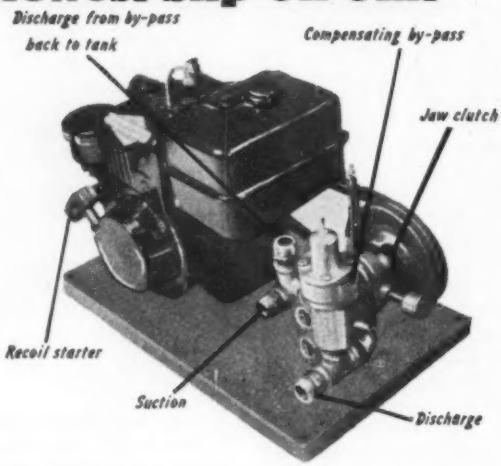

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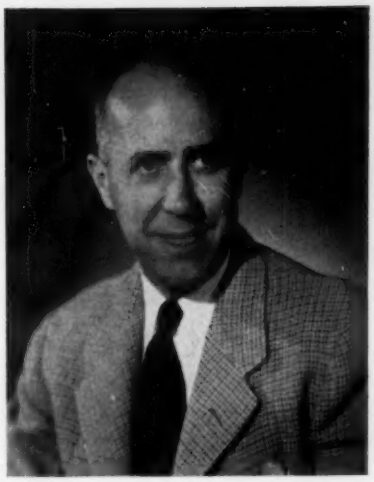
National Forest in Wyoming. He has served in the Southern Region, in Washington, D. C., and in California, as well as in the Rocky Mountain Region. Born in Illinois, he received his B.S. degree in forestry from Michigan State University in 1924.

Mr. Clark is currently serving his second two-year term as a member of the Council of the Society of American Foresters.

David S. Nordwall, the new regional forester, served in the Rocky Mountain region for many of his 30 years with the Forest Service.

He was staff man in the Denver office from 1954 to 1957, before which he served as ranger and supervisor on several national forests in this area, and assistant regional forester in Denver. Four years ago he was assigned to Washington, D. C., where he organized the Internal Audit program for the Forest Service and has since served as its director.

Mr. Nordwall, born in Illinois, was graduated *cum laude* from Michigan State University in 1933.



DAVID S. NORDWALL

Canadian Resources Conference

More than 500 delegates from across Canada are expected to attend a week-long conference on natural resources, starting October 23 at the Queen Elizabeth Hotel in Montreal. With the theme "Resources for Tomorrow" the conferees will study and discuss problems and needs in forestry, agriculture and land use, fisheries and wildlife, recreation, and water.

Menominee Forests

The Menominee Indians ended their federal wardship on May 1 and have formed Menominee Enterprises, Inc., within Menominee County, Wis. The principal asset of the new corporation is 200,000 acres of mixed conifer and northern hardwood forests and the tribal sawmills. Leo V. Bodine, formerly executive vice president of NLMA, will direct the corporation's forestry program.

The principal activity of the Menominees will be timber operations initially, with increasing emphasis on recreational opportunities to follow.

Appointed to S. C. Commission

C. H. Niederhof of Summerville has been named by Governor Hollings to the South Carolina State Commission of Forestry, governing board of the state's forestry agency. A graduate of Pennsylvania State, with post graduate work at the University of California and Harvard, Mr. Niederhof is the first professionally trained forester appointed to the Forestry Commission since it was created in 1927.

In addition to his new post, Mr. Niederhof is presently serving as chairman of the South Carolina Forestry Study Committee and is a member of

(*Continued on page* 542)

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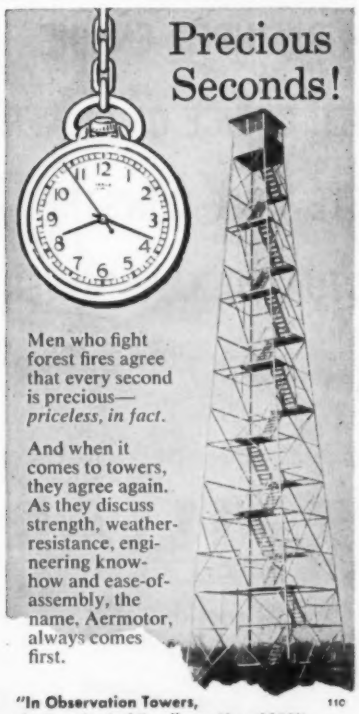
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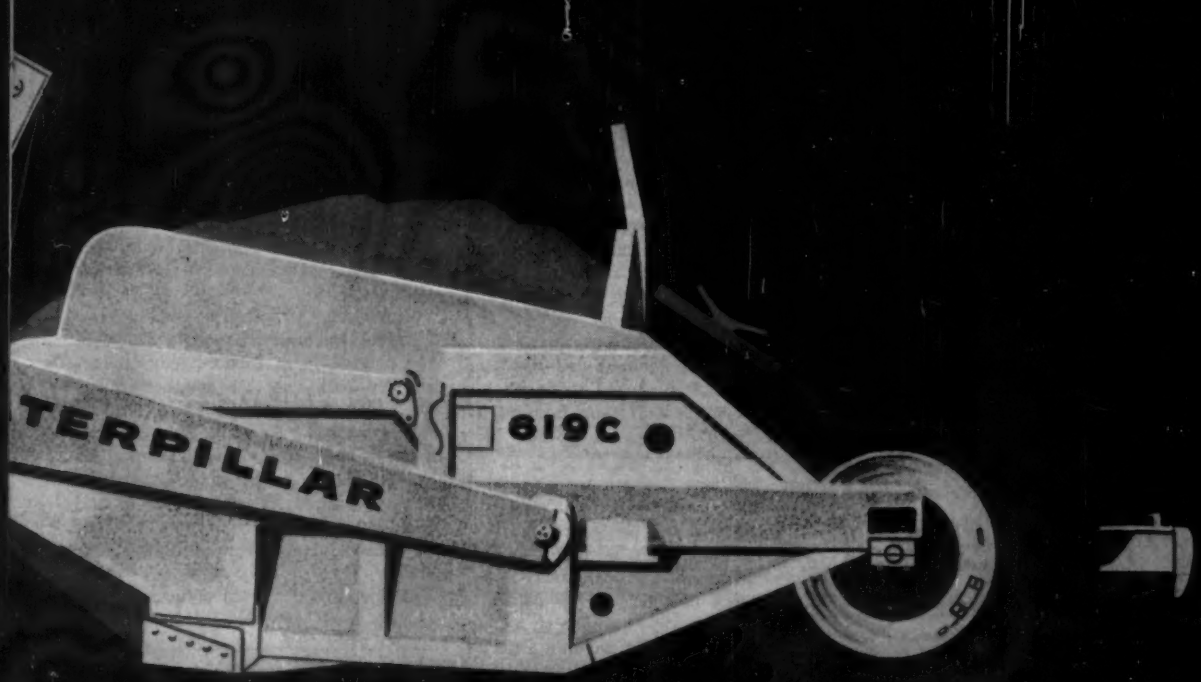

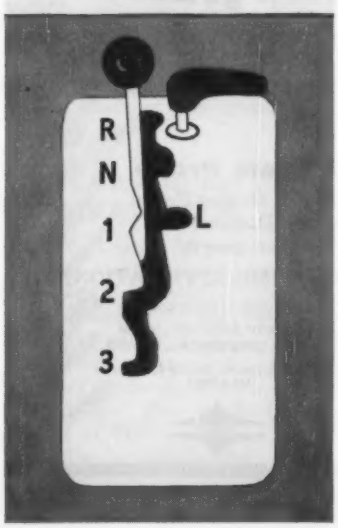

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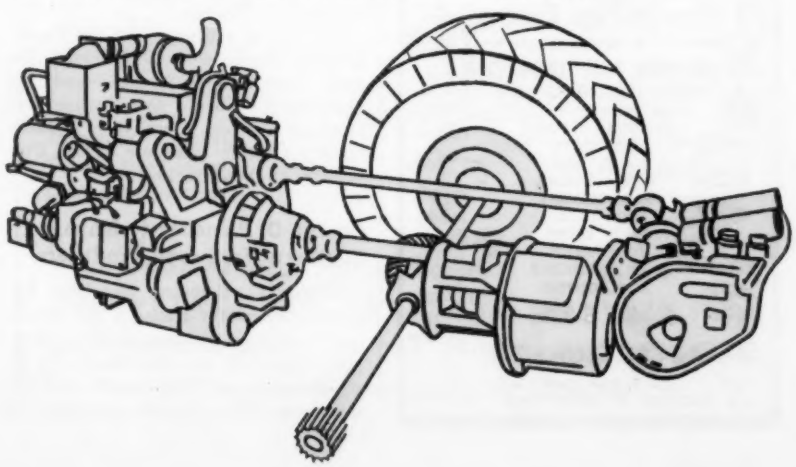

the Forest Industries Committee of South Carolina, the Foresters' Council of South Carolina, and the Society of American Foresters, as well as a former president of the Southern Pulpwood Conservation Association. He is wood procurement manager at West Virginia Pulp and Paper Company's Charleston mill.

Private & Industrial

International Paper Board Changes

The board of directors of International Paper Company at its annual organization meeting in May designated John H. Hinman honorary chairman of the board and also appointed him director of woodlands. He will continue to serve as a member of the board of directors.

Replacing Mr. Hinman as chairman of the board will be Richard C. Doane, who has served as president of the company since 1954 and as chief executive officer ince 1959. Mr. Doane will continue to be chief executive officer. Lamar M. Fearing was elected to succeed Doane as president and Joseph P. Monge was elected vice president and treasurer.

Mr. Hinman joined International Paper in 1913 as a woodlands manager in northern New Hampshire and his career with the company has been closely identified with forestry operations. He served for a time as president of Canadian International Paper Company and was elected president of International Paper Company in 1943 and chairman of the board in 1954. He has been a member of the board of directors since 1936 and is also a member of the board of Canadian International Paper and of the International Paper Company Foundation.

As director of woodlands, Mr. Hinman will have general charge of all matters relating to operation of the company's Woodlands Departments and their long-range objective of achieving full multiple use of all lands under their management.

Forester Promoted

The appointment of Robert E. Johnson as manager of Weyerhaeuser Company's Arcata, Calif., branch has been announced by Jon. R. Titcomb, vice president of the firm's wood products division.

Johnson has been serving as branch timber manager since the former Roddiscraft operation was acquired by Weyerhaeuser in 1960. He replaces Kirk R. Cooper, who was recently named manager of softwood plywood products at Tacoma.

Johnson is a director of the Pacific Logging Conference, the Redwood Region Logging Conference, and the Northern California Log Scaling and Grading Bureau. A native of Seattle, he is a forestry graduate of the University of Washington.

George C. Romeiser to Manage Southern Hardwood Producers

George C. Romeiser has been appointed secretary-manager of Southern Hardwood Producers, Inc., Memphis, Tenn., it was announced by H. S. Mersereau of the Crossett Lumber Company, Crossett, Ark., president of SHPI. He succeeds L. J. Heatherly, who has retired after 25 years service.

Romeiser returns to Memphis after five years as secretary-manager of the American Walnut Manufacturers' Association in Chicago. For six years prior to that he was on the Southern Hardwood Producers staff.

The new secretary-manager of the Walnut Association will be Donald H. Gott of Marshfield, Wis., formerly sales manager of the Marshfield Mill of Roddis Division, Weyerhaeuser Company.

Romeiser, a forestry graduate of Purdue University, has been active in the promotion of forest products during most of a career spanning more than 20 years. Before World War II he was with the Forestry Relations Department of TVA. During the war he served five years as an artillery man with the First Armored Division and attained the rank of major. He served in Africa, Italy, England, and Ireland.

Prior to his first affiliation with Southern Hardwood Producers, Ro-

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meiser was on the staff of the National Lumber Manufacturers Association.

Forest Industries Appoint Chicagoan Education Director

Stanley M. Jepsen of Chicago, Ill., has been named education director for American Forest Products Industries in Washington, D. C., according to C. A. Gillett, AFPI managing director.

Jepsen, formerly associate editor of *The Timberman* and *The Lumberman* magazines for Miller Freeman Publications, succeeds Mrs. Edward N. MacConomy, who resigned after 10 years with AFPI.

At the same time, Gillett announced that Miss June McSwain of Arlington, Va., a former teacher, has been appointed assistant education director.

Jepsen is a native of Columbus, Ohio. He attended Ohio State University and is a 1954 graduate in forestry from the University of Idaho. He received the Master of Forestry degree from Idaho in 1955. During his graduate work, he minored in education.

Before joining Miller Freeman in 1956, Jepsen taught at Trinity County High School, Weaverville, Calif.

St. Regis NW Undergraduate Scholarship

St. Regis Paper Company announces that its Northwest Undergraduate Forestry Scholarship for 1961-1962 has been awarded to Edmund Richard Bodyfelt, a sophomore at the College of Forestry, Oregon State University.

Bodyfelt was selected over seven other applicants from forestry schools in Montana, Washington, and Oregon. Extending over two years, the St. Regis grant is valued at $1,600.

Bodyfelt entered the College of Forestry at Oregon State University in 1960. He is majoring in forestry engineering.

The St. Regis scholarship committee also announced that James C. Space, a junior in the College of Forestry at the University of Idaho, and last year's recipient of the grant, will receive the second half of his award for his senior year.

Win Continental Can Forestry Scholarships

T. W. Earle, vice president of Continental Can Company, Inc., has announced that Ralph J. Pacetti, Jr., of Callahan, Fla., and John Edward Morris, Fernandina Beach, Fla., have been selected winners of two four-year forestry scholarships to the University of Florida. The scholarships, each valued at $1,000 per year, are given annually by Continental Can Com-

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pany of Savannah, Ga., to create a greater interest in the forestry profession among outstanding high school graduates in North Florida, Georgia, and South Carolina.

Continental also announces from Hodge, La., that another award of the same amount has been made in Louisiana, to Richard Pierce Barlow of Weston.

Schools

First Gevorkiantz Memorial Award Made

Robert L. Koenig, a forestry student at the University of Michigan's School of Natural Resources, has been given the first George Gevorkiantz Memorial Award of $125. Of a group of superior papers, his was judged best on a basis of originality of thinking, excellence of research, quality of writing, and organization of material.

Koenig's paper was one of seven submitted by the forestry school heads of Iowa State University, Michigan State University, the University of Michigan, and the University of Minnesota. These papers had been selected as the best papers or theses prepared by undergraduate students or Master degree candidates at their respective schools. The seven were then judged and rated by a 5-man awards committee consisting of R. M. Brown of the University of Minnesota, J. B. Millar of the Kimberly-Clark Corporation of Neenah, Wis., Paul O. Rudolf of the Lake States Forest Experiment Station, Norman F. Smith of the Michigan Conservation Department, and C. H. Stoltenberg of Iowa State University.

J. S. BOYCE

This award was established as a memorial to the late S. R. (George) Gevorkiantz, for many years statistician at the Lake States Forest Experiment Station, St. Paul, Minn. About 100 friends and professional associates contributed funds which will make possible similar awards during the next decade, according to M. B. Dickerman, chairman of the George Gevorkiantz Steering Committee, who is director of the Lake States Forest Experiment Station.

J. S. Boyce to Teach at Georgia

Dr. John S. Boyce, Jr., forest pathologist, was named to the University of Georgia's Department of Plant Pathology and Plant Breeding July 1, according to department chairman, Dr. John H. Owen. Dr. Boyce has been with the Southeastern Forest Experiment Station, U. S. Forest Service, Asheville, N. C., for the past eleven years, where his major areas of forest tree disease research have been *Fomes annosus* root rot, needle diseases of pine, oak wilt. He has also made investigations on other diseases such as pitch canker, oak decline, Virginia pine stem rust, chestnut blight, and mimosa wilt.

Dr. Boyce is considered one of the leading authorities in this country on the *Fomes annosus* root rot of pine. He made a study of this disease in Europe in 1960. The pathologist will continue his research on annosus root rot at the University of Georgia and will teach forest pathology and develop a graduate program in this area, said Dr. Owen.

Studies Abroad

Dr. Ronald Beazley, Southern Illinois University professor of forestry, is attending a special advanced summer seminar course at the University

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of Oxford, England, for five weeks, beginning June 27.

The course, entitled "Land Use for Forestry and Agriculture," will feature nationally or internationally recognized authorities in various problems of forestry and other agricultural land uses, especially in countries where population density is high as in England and elsewhere in Europe.

Beazley will be the only U. S. forestry educator among the 18 persons participating in the seminar. Others will be mostly senior forestry officers and land administrators from British Commonwealth nations throughout the world.

A native of Nova Scotia, Beazley joined the SIU forestry department faculty in 1959 as a specialist in forest economics after six years on the faculty of the University of Minnesota. He received his Master degree from Yale and his Ph.D. from Purdue University.

Fred M. Packard to Direct Conservation School

The National School of Forestry and Conservation has announced that Fred M. Packard has been appointed to the School's directorship. He succeeds Charles H. Stoddard, founder, who resigned to join the staff of the Secretary of the Interior.

Mr. Packard has experience in conservation, particularly in park and wildlife programs. He will have general supervision over the School's three home study courses which are handled at its administrative office, 2144 P Street, N. W., Washington 7, D. C.

The School, which was founded in 1958, offers courses in forestry, wildlife, park conservation, and soil-water conservation for vocational-level training. Its field training camp, to which graduates of the home study course may go for on-the-ground instruction, will continue at Wolf Springs Forest near Minong, Wis. Albert J. Johnson, a professional forester, will be the director of the School's camp.

Mr. Stoddard will continue to serve as a member of the School's advisory council.

Washington State Degree Titles Changed

The 1961 session of the Washington Legislature amended the basic higher education law, originally enacted in 1917, to authorize forest management as a major line of work at both Washington State University and the University of Washington. The previous statute limited this to the University of Washington. This change of status permits Washington State University to grant degrees in forest management. Previously, graduates of both the forestry curriculum and range management curriculum received the B.S. in Agriculture. WSU has had a forestry program continuously since 1907 and a range management program since 1923.

Recent university action formally authorized the degrees, Bachelor of Science in Forest Management and Bachelor of Sciene in Range Management, to be granted through the Department of Forestry and Range Management.

The department recently moved into its new quarters in the $4,000,000 E. C. Johnson Hall. This building provides centralized modern teaching and research facilities for the plant sciences group of the Institute of Agricultural Sciences; Forestry, Range Management, Agronomy & Soils, Horticulture, Plant Pathology, and Agricultural Entomology, together with cooperating federal research agencies and extension specialists.

Southern Illinois Receives Grant

A $9,000 grant to Southern Illinois University from the Sahara Coal Co., Chicago, for forestry scholarships over the next four years has been announced by Dr. Neil Hosley, chairman of the SIU forestry department. The firm provided $9,600 in 1957 for a similar scholarship program.

Under provisions of the grant, 10 cash scholarship grants of $225 each will be made annually to SIU forestry students meeting certain scholastic and residence requirements.

Secretary Udall to Keynote Resources Conference at CSU

Interior Secretary Stewart Udall has tentatively accepted an assignment as keynote speaker for the third annual Western Resources Conference to be held August 7-11 on the campus of Colorado State University, Fort Collins.

The secretary will address some 250 nationally known economists, political scientists, engineers, and resource managers from throughout the nation on "Resource Planning for Economic Growth." Governor Steve McNichols of Colorado will make the welcoming address.

Under the conference theme "Land and Water: Planning for Economic Growth," discussion sessions will be conducted on many phases of national, regional, and state planning for best use of the nation's resources. A number of field trips, including an inspection of CSU's hydraulics research facility, have been scheduled.

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The conference is sponsored jointly by CSU, the University of Colorado, and the Colorado School of Mines. Dr. Robert E. Dils, professor of cooperative watershed management, is general chairman.

Public

Fillmore Is Selected Director in South Dakota

Walter J. Fillmore has been named South Dakota director of Game, Fish and Parks. A graduate forester of the University of Minnesota, Fillmore had been serving as acting director since Harry R. Woodward resigned to accept a similar position in Colorado. The new director joined the department in 1947 as timber management forester in Custer State Park, became assistant state forester later, and in 1957 became state forester.

Ramke Receives TVA Promotion

Thomas F. Ramke was named chief of TVA's Forest Development Branch, effective April 30. He succeeds Kenneth J. Seigworth who became director of the Division of Forestry Relations when Richard Kilbourne left that position to become director of TVA's Tributary Area Development program.

Ramke is a graduate of Louisiana State University School of Forestry. Before joining TVA in 1942 he spent two years with the Louisiana Department of Conservation. He began his TVA service as a junior forester in Huntsville, Ala., working there and at Scottsboro for about five years. He moved to Paris, Tenn., as assistant district forester in 1946. Since 1949 he has been TVA forestry representative at Chattanooga. His new headquarters will be in Norris, Tenn.

Mr. Ramke is a member of the Society of American Foresters and a past chairman of the Kentucky-Tennessee Section.

L. R. GROSENBAUGH

W. E. Fry Retires, V. N. Stokes Successor

William E. Fry, supervisor of the Beaverhead National Forest, Dillon, Mont., terminated 39 years of active duty with the U. S. Forest Service on June 30, according to an announcement by Regional Forester Boyd L. Rasmussen, Missoula.

A native of Colorado, Fry began his Forest Service career in 1919 as a seasonal fire fighter and fire guard. Following his graduation in 1923 from the School of Forestry, Montana State University, he became a ranger on the Lewis and Clark National Forest. After a detail to the Northern Rocky Mountain Forest and Range Experiment Station on forest fire studies, he spent five years on range management and wildlife management assignments in Montana and North Idaho.

Fry returned to Montana in 1939 as assistant forest supervisor of the Helena National Forest; in 1943 he was promoted to forest supervisor of the former Cabinet National Forest, with headquarters in Thompson Falls; he transferred to the Deerlodge National Forest as supervisor in 1944 and in July 1952 to the Beaverhead, from which position he retired.

Victor N. Stokes, forester in charge of range management programs in the regional office, will succeed Mr. Fry as supervisor, according to Regional Forester Rasmussen.

Stokes is a graduate of Utah State University. He joined the Forest Service in 1935, serving initially with the Civilian Conservation Corps in Utah. In 1936 he was appointed ranger on the Teton National Forest at Jackson, Wyo., and served there until his assignment to the Fishlake National Forest in 1950.

Grosenbaugh Heads New Research Group

A pioneering research group—the first of its kind in the U. S. Forest Service—has been set up to do basic research in forest mensuration.

The project, which is national in scope, will be supervised by Lewis R. Grosenbaugh and headquartered at the Pacific Southwest Forest and Range Experiment Station in Berkeley, Calif. Formation of the group was announced by Dr. Keith Arnold, director of the Forest Service's Berkeley station.

Grosenbaugh has been promoted and transferred to Berkeley in June from the Southern Forest Experiment Station in New Orleans, where his work has won wide recognition for original contributions in forest management and inventory methods.

"This pioneering research unit, like others in the U. S. Department of Agriculture, is an attempt to advance the frontiers of knowledge by putting an outstanding scientist to work on basic studies of his own choice," Dr. Arnold said.

Grosenbaugh's work will deal with four general fields: (1) basic principles of tree measurement, (2) analysis of forest stand conditions, (3) prediction of timber growth and yield, and (4) the mathematics of forest management. Better knowledge in these fields is fundamental to future programs in both the business and the science of timber production.

Grosenbaugh has been with the Forest Service since 1936, except for a 4-year hitch on Navy destroyers in the Pacific during World War II. Since 1946 he has been on the staff of the Southern Forest Experiment Station, and since 1951 has been chief of its Division of Forest Management Research.

His research achievements have won him the Department of Agriculture's superior service award.

In recent years Grosenbaugh has been a leader in developing uses of electronic data processing machines in forest research. His report titled "The

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Elusive Formula of Best Fit" has been called one of the outstanding contributions to biological research in the history of forestry.

N W Editor Promoted

E. F. Peffer, publications editor for the Pacific Northwest Forest and Range Experiment Station, transferred on May 1 to the Washington, D. C., office of the U. S. Forest Service.

Peffer's promotion gives him responsibility for the maintenance and coordination of instructions on Forest Service operating procedures.

For the past 5 years, Peffer has been working with personnel of the Experiment Station on the publication of research project results. His earlier Forest Service experience includes 3 years in the information and education division of the Portland regional office, and 2 years on the Wenatchee National Forest. He was assigned to the Northern Rocky Mountain Forest and Range Experiment Station in Missoula, Mont., and had brief assignments on

E. F. PEFFER

the Cabinet National Forest and in the engineering division of the regional office in Montana.

A World War II veteran, Peffer was trained both in forestry and journalism, having received a forestry degree from Syracuse University and a journalism degree from Montana State University. He is a member of the Society of American Foresters, the Society of Technical Writers and Publishers, and Sigma Delta Chi, a professional journalistic society.

Peffer will be succeeded by George M. Hansen, formerly an associate editor of Crow's *Pacific Lumber Digest* and editor of Crow's *Western Equipment and Timber News.*

Hansen has a Master degree in forestry from the University of California, and has worked for several lumber firms in the Northwest. In 1948, he joined the staff of West Coast Lumbermen's Association in their trade promotion department, leaving in 1956 to become affiliated with Crow Publications, Inc.

He is a member of the Society of

GEORGE M. HANSEN

American Foresters and is a Navy veteran.

Huber to Southern Post

William W. Huber, since 1955 director of the National Smokey Bear Forest Fire Prevention Program in Washington, D. C., has been named assistant regional forester in charge of U. S. Forest Service information programs in the South.

An announcement by Southern Regional Forester J. K. Vessey said Huber's appointment was effective May 28.

Huber succeeds George S. James, who was promoted to the position of deputy to Assistant Chief A. W. Greeley.

In 1959, the Smokey program received the American Public Relations Association Silver Anvil Award for the nation's best public relations performance in the agriculture category.

Prior to his assignment to the Washington Office of the Forest Service, Huber directed wildlife management in

(Continued on page 550)

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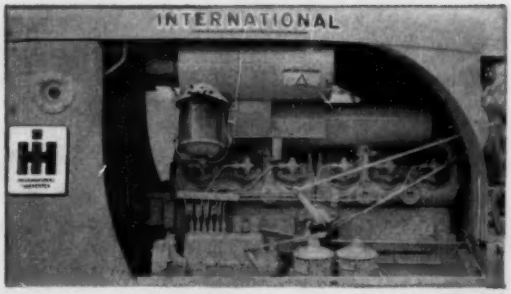

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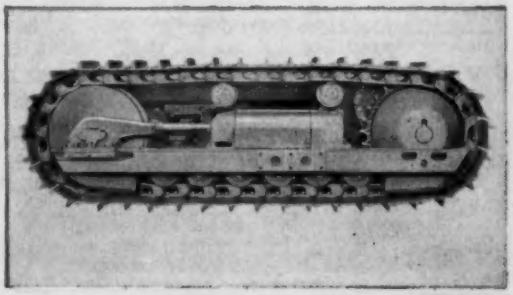

the Pacific Northwest Region of the Service at Portland, Ore., from 1950 to 1955; worked as information specialist in the Northeast Region of the Forest Service from 1948 to 1950; and as assistant ranger and district forest ranger on the Pisgah and Cherokee National Forests in North Carolina and Tennessee from 1936 through 1948.

Information Chief Named

E. M. Bacon has been named chief, Division of Information and Education, for the Intermountain Region of the U. S. Forest Service, it has been announced by Regional Forester Floyd Iverson.

Mr. Bacon has been assistant regional forester in charge of the Division of Fire Control and State and Private Forestry for the past two years.

A native of Connecticut, Bacon graduated in forestry from the University of Connecticut in 1935 and received the Master of Forestry degree from Yale University in 1937. He entered the Forest Service in California in 1938. He served with the U. S. Air Corps in the United States and the European Theater from 1941 through 1945, attaining the rank of lieutenant colonel. Returning to the California Region following the war, Bacon has subsequently also worked in the Rocky Mountain Region, as supervisor of the Allegheny National Forest in Pennsylvania, and in the Division of Fire Control in the Washington Office.

Hurd Heads Alaska Research Program

Richard M. Hurd has been appointed director of the Forest Service research program in Alaska, recently designated as the Northern Forest Experiment Station. The program is centered at Juneau with work concentrated in the Southeast Coastal areas and at Fairbanks in the Interior. Investigations underway emphasize timber management, watershed management, fire and insect control, and a forest survey.

KARL F. WENGER

Mr. Hurd received his forestry degree at Iowa State College in 1939. During his forestry training, he worked for the Forest Service in the Lake States Region, Montana, and Utah. He began his active research career in the Forest Service at the Intermountain Forest and Range Experiment Station, Ogden, Utah. Following service from 1943 to 1946 as an officer in the U. S. Navy, Hurd returned to the Intermountain Station and conducted research on range reseeding in Nevada and Idaho. In 1949, he was transferred to the Division of Range Research in Washington, D. C. In 1951 Hurd was transferred to the Rocky Mountain Forest and Range Experiment Station in Colorado, and organized, developed, and conducted research in cattle grazing of mountain ranges in the Bighorn region of Wyoming. In 1955, Mr. Hurd was transferred to Rapid City, S. Dak., where he organized, developed, and supervised the first formal forest research in the Black Hills region.

Mr. Hurd is a member of the Society of American Foresters, Ecological Society of America, American Society of Range Management, and South Dakota Academy of Science. He was to assume his new position about July 1.

Wenger Heads Southern Management Research

Dr. Karl F. Wenger has been named chief of forest management research at the Southern Forest Experiment Station, U. S. Forest Service. His appointment was announced in New Orleans by Director Philip A. Briegleb.

He succeeds Lewis R. Grosenbaugh, whose recent promotion took him to Berkeley, Calif., to head the Forest Service's new research program in forest mensuration.

Wenger was born in Springfield, Mass. He holds a Bachelor degree in forestry from the University of Maine and the Master and Ph.D. degrees from Duke University. He goes to his new position from Olustee, Fla., where he has been in charge of the Lake City Research Center, maintained by the Southeastern Forest Experiment Station.

Letters

On Membership Grades

The perennial and omnipresent topic of membership grades is being argued with somewhat greater vigor *once again;* consequently, it would appear that, come autumn, we will have the glorious "privilege" of exercising our democratic prerogatives in voting *once again* on this seemingly vital topic!

The main argument centers around retaining our present classification of

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Junior and Member grades; *or* reverting to the old system of Junior and Senior grades; *or* combining Junior and Member grades; *or* changing the nomenclature entirely—all very confusing. Just what difference does all this make after all?

I should like to offer three observations:

1. Many of us sometimes wonder how much energy we have wasted and have caused the executive secretary's office to waste in dealing with this perennial subject. Can't we use this energy to greater advantage in meeting the more important problems of the day?

2. We are a professional group, but one has reason to question whether we deserve being classified as such. Maturity of judgment and consistency in purpose are two basic criteria. But neither of these seems to apply in dealing with our membership grades. Maturity and consistency would disregard these hair-splitting interpretations, avoid such minutiae, and declare a moratorium on the whole membership grades discussion—for several years, at least!

3. We should be confident enough in our position to enjoy the full benefits of our professional society irrespective of titles indicating our rank.

MARLIN H. BRUNER
Clemson College, S. C.

The May Cover Pic

It may be of interest and for the record to know that the fisherman on the cover page of the May 1961 JOURNAL OF FORESTRY is none other than Erwin A. Heers, a 1922 classmate of mine at the New York State College of Forestry at Syracuse University.

He was a very much liked person whom we missed at our reunion on April 12, 1961, he having passed away recently.

Theodore W. Earle, also of the Class of 1922, sent to me the March 1961 issue of the "Southern Outdoors," which had the same picture on its cover page.

JULIUS KAHN
New York, N. Y.

Men-shoo-ra'-shun?

It comes as something of a shock for me to learn, after 28 years in the profession of forestry, that I, and countless others, have been at odds with *Webster's New Collegiate Dictionary* in the pronunciation of a term that we all use commonly. The word is mensuration, and the pronunciation listed is men-*shoo*-ra'-shun.

Perhaps we should consider encouraging a scholarly inquiry into this matter by someone raising the question in the JOURNAL. I'm ineligible, I'm afraid, because I'm prejudiced by all these years of "soo" instead of "shoo." You see, I think Webster is wrong and should be so informed.

PETER W. FLETCHER
University Park, Pa.

Opposes Licensing

I am opposed to the licensing and registering of professional foresters.

1. The law in order to be constitutional must provide a "grandfather" clause which will admit any practicing forester at the time the law passes regardless of competence.

2. The charge for licensing is nominal but once the law is on the books the fees will be increased. Oregon was the first state in the Union to pass a driver's license law. I hold license No. 73286 dated August 20, 1920. Stamped across the license is "This license is valid until revoked." It was good for life. The license fee was $0.25. The politicians were quick to see in the driver's license a new source of revenue and now each year we must purchase a license at a continually increasing fee. The same will apply to a fee for the registration of foresters.

3. I am a licensed and registered professional engineer in two states. Only one man in a firm or organization needs to be registered. He can sign blue prints and estimates for those not registered.

The Forest Service and the Bureau of Land Management are not going to require their employees to be registered.

4. The law will simply be another law. We have too many laws now.

5. Membership in the Society of American Foresters, a degree from an established and accredited school should be sufficient safeguards to the public's interest. The Society has a committee on ethics which has authority to discipline a member violating ethics.

W. J. O'NEIL
Columbia, Mo.

Meaning Changed

Your attention is invited to the final paragraph of my book review of the *Manual of Photographic Interpretation* appearing in the April issue. The final sentence of the original review, as originally submitted, reads, ". . . It is, *however*, a most . . .," whereas the review as published phrases it, ". . . It is in addition a most. . . ." I feel this substantially changes the meaning I was attempting to convey. May I take the liberty of condensing the last paragraph into a single sentence in the hopes of clarifying this?

"The Manual is not designed primarily as a beginning photo viewing and reading text, *however*, it is a most valuable text for the more advanced student, educator and practicing photo interpreter."

MERLE P. MEYER
St. Paul, Minn.

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Forester, B.S. Forest Management, Auburn University, 1960. M.F. Duke University, 1961. Age 24, married 1 child. Experience: Summer work with U.S.F.S. and private company 15 months; experimental plot lay-out and examination, timber cruising and marking, boundary surveying. Aerial photo interpretation a specialty. Desire Southeast with public or private agency.
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Box F, Society of American Foresters, 425 Mills Building, Washington 6, D. C.

B.S. 1951, New York State College of Forestry. Age 32, married, one child. Experience: forest management, recreation planning, international forestry, conservation writing and editing, and personnel management; with U.S. Forest Service (California), Point-4 Program overseas, and three years with major conservation education organization. Seeking employment with forest industry or association in public relations, information and education. Will relocate.
Box G, Society of American Foresters, 425 Mills Building, Washington 6, D. C.

Forester, B.S.F., Arkansas College, 1959. Age 28, single, veteran. Experience: Two summers, U.S. Forest Service as Engineers Aid and T.S.I. crewman; past 2½ years with private industry doing wide variety of forest management work including surveying, timber sales, acquisition, reforestation and administrative tasks. Desire position in bottomland hardwood region with opportunity for responsibility and advancement.
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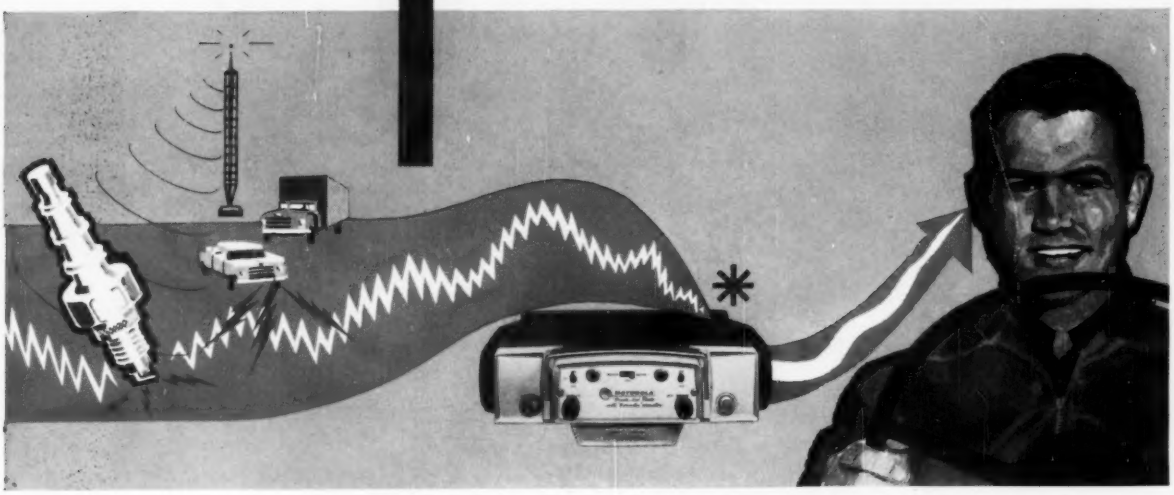

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